

## Modoc County Onsite Wastewater Treatment System LAMP

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- (B) The tank, aeration equipment assembly, or riser at a location accessed during maintenance cycles and inspections.
- (b) Each data plate must include:
  - (A) Manufacturer's name and address;
  - (B) Model number;
  - (C) Serial number (required on one data plate only);
  - (D) Rated daily hydraulic capacity of the system; and
  - (E) The performance expectations as determined by performance testing and evaluation.
- (8) Siting and absorption area construction criteria.
  - (a) ATTs approved for treatment standard 1 may be sited and sized as follows.
    - (A) In areas with permanent groundwater, where 4 feet of separation can be maintained between the bottom of the trench and groundwater and the other criteria in 20.0 Conventional Sand Filter Systems can be met.
    - (C) On sites meeting criteria for standard onsite systems or for pressurized systems defined in this policy.
  - (b) ATTs used in conjunction with approved disinfection and approved nitrogen reduction processes and approved for treatment standard 2 may be sited and sized as follows.
    - (A) On sites meeting the criteria for treatment standard 1 in subsection (a) of this section.
    - (B) In areas with a permanent water table, in accordance with specifications for sand filters in areas with a permanent water table in 20.0 Conventional Sand Filter Systems.
  - (c) Any type of absorption area permitted for a sand filter system, including the gravel-less absorption method, may be permitted for an ATT system.
- (9) Limited warranty. The ATT manufacturer must:
  - (a) Warrant all components of the ATT to be free from defects in material and workmanship for a minimum of two years from the date of installation; and
  - (b) Fulfill the terms of the warranty by repairing or exchanging any components that the manufacturer determines may be defective.
- (10) Installation. ATTs must be installed in accordance with the manufacturer's instructions and this division. The installer must be certified by the ATT manufacturer to install the system and provide written certification to the agent that the ATT component was installed in accordance with the manufacturer's instructions and this rule.
- (11) Sampling ports. A sampling port must be designed, constructed, and installed to provide easy access for collecting a free falling or undisturbed sample from the effluent stream. The sampling port may be located within the ATT or other system component (such as a pump chamber) if the wastewater stream being sampled is representative of the effluent stream from the ATT.
- (12) Operation and maintenance standards. The owner of an ATT system must ensure the ATT and all components of the onsite system are properly operated and timely maintained or decommissioned and the effluent standards in section (3) of this rule are met.
- (13) Owner's manual. The designer of each onsite system using an ATT must provide a comprehensive owner's manual prepared by the manufacturer or designer to the system owner, manufacturer's representative, installer, and if requested, the agent before or at the time of installation. The manual may be a collection of individual system component manuals and must include information on system specifications, system installation, operation and maintenance, and troubleshooting and repair. The information must be presented in a manner that can be easily understood by the owner.
- (14) Service contracts.



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- (a) The owner of an ATT system must maintain a contract, in accordance with this policy, with a maintenance provider to serve and maintain the onsite system. A service contract must be entered before the system is installed and must be maintained until the system is decommissioned.
- (b) A maintenance provider must be certified by the manufacturer to provide service on an ATT.

### **30.0 Absorption Trenches in Saprolite**

(1) General conditions for approval. An onsite system construction-installation permit may be issued for a single family dwelling on a site with soil shallow to saprolite if requirements in either subsection (a) or (b) of this section can be met.

(a) If slope does not exceed 30 percent:

(A) The saprolite is sufficiently weathered so that it can be textured, crushed, or broken with hand pressure to a depth of 24 inches and can be dug from a test pit wall with a spade or other hand tool to a depth of 48 inches; and

(B) Clay films or iron coatings with moist values of 5 or less and moist chromas of 4 or more, organic coatings with moist values of 3 or less and moist chromas of 2 or more, or both occur on fracture surfaces of the saprolite to a depth of 48 inches.

(b) If slope exceeds 30 percent but not 45 percent:

(A) The saprolite is sufficiently weathered so that it can be textured, crushed, or broken with hand pressure to a depth of 24 inches and can be dug from a test pit wall with a spade or other hand tool to a depth of 60 inches; and

(B) Clay films or iron coatings with moist values of 5 or less and moist chromas of 4 or more, organic coatings with moist values of 3 or less and moist chromas of 2 or more, or both occur on fracture surfaces of the saprolite to a depth of 60 inches.

(c) For saprolite derived from granite or other deposits where clay films or iron coatings are not present, a soil absorption test and the degree of consolidation may be used to predict hydraulic conductivity of the saprolite. Agents may approve sites where conductivity is sufficiently high to ensure adequate drainage.

(2) Construction Requirements.

(a) Standard absorption trenches must be installed where slope does not exceed 30 percent.

(A) The trenches must be installed at a minimum depth of 24 inches and a maximum depth of 30 inches below the natural soil surface and contain 12 inches of filter material and a minimum of 12 inches of native soil backfill.

(B) The trenches must be sized at a minimum of 100 linear feet (24 inch width) per 150 gallons projected daily sewage flow.

(b) Seepage trenches must be installed where slope exceeds 30 percent but not 45 percent.

(A) Seepage trenches must be installed at a minimum depth of 30 inches and at a maximum depth of 36 inches below the natural soil surface and contain a minimum of 18 inches of filter material and 12 inches of native soil backfill.

(B) Seepage trenches must be sized at a minimum of 75 linear feet (24 inch width) per 150 gallons of projected daily sewage flow.

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## **31.0 Geographic Area Special Considerations.**

- (1) No area in Modoc County has been identified at this time.

## **32.0 Monitoring and Identification of High Risk Areas Due to Impacts From OWTS, Local Hydrogeology, and Site Conditions**

- (1) No area in Modoc County has been identified to be negatively impacted by OWTS. Modoc County Environmental Health is committed to monitoring water quality information submitted by realtors in an effort to identify vulnerable areas that warrant further investigation. Information that warrants investigation shall be remitted in the annual report to the applicable regional water quality control board.
- (2) MCEH shall follow local ordinance pertaining to size requirement for parcel creation, requirements of OWTS, and potential impacts to water quality.
- (3) A refined water quality monitoring program that will provide relevant information to the function of OWTS in Modoc County is planned to be developed by year five when the State Water Board renews the waiver. At this time MCEH will endeavor to compile data relevant to OWTS and comply with State Water Resources Control Board policy section 9.3.3.
- (4) Upon completion of MCEH geographic information system (GIS) training and system installation, areas that do not meet the criteria for a standard OWTS shall be identified on a GIS layer with limiting criteria identified.

## **33.0 Impaired Water Bodies Attributed to OWTS**

- (1) No 303(d) listed water body impaired by OWTS has been identified in Modoc County at this time.

## **34.0 Rural Area Consideration**

- (1) An agent may approve a new design and construction of standard or alternative systems that depart from this policy in designated rural zones if the following requirements are met.
  - (a) A minimum parcel size of at least 20 acres.
  - (b) The parcel as proposed or existing is at least 20 acres and does not have an accessible area approvable for a standard onsite system.
  - (c) The parcel cannot be reduced to less than 20 acres.
  - (d) The permit is for an onsite system designed to serve a single family dwelling or a commercial facility allowed in the zone with a flow no greater than 600 gpd.
  - (e) The onsite system will unlikely create a public health hazard or pollute public waters.
  - (f) Requiring strict compliance with standards, would in the judgment of the agent, be unreasonable, burdensome, or impractical.
- (2) An agent may approve a repair application for an existing system that would deviate from the standards in this policy if all the following conditions are met:
  - (a) The permit is for an onsite system designed to serve a single family dwelling or a commercial facility allowed in the zone with a flow no greater than 600 gpd.
  - (b) Prior to failure, there is no evidence the previous OWTS created an unforeseen public health hazard.
  - (c) There is no substantial evidence that the replacement OWTS will pollute public waters or create a public health hazard.



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- (d) With no financial assistance mechanism in place, as per the intent of AB 885, to assist the property owner. Requiring strict compliance with standards, would in the judgment of the agent, be economically unreasonable.
- (e) The following conditional use is stated on the repair permit: "The repaired OWTS does not meet current policy to best protect public health and water quality." If a system evaluation is required at the time of property sale, MCEH will state "The repaired OWTS does not meet current standards and has an increased risk to negatively impact public health or water quality."

### **35.0 Community Systems**

- (1) A person may not construct a community system without a permit.
- (2) Plans for all community systems must describe the system and how it is to be operated, maintained, and financed.
- (3) Community systems must satisfy the siting criteria in this division for standard or alternative systems.
- (4) Operation responsibility. Municipalities, homeowner associations, or associations of unit owners must operate and maintain community systems including inspections annually or as required by a permit, or these rules.
- (5) Community systems discharging more than 10,000 gpd shall apply to the applicable regional water quality control board for permitting and compliance.
- (6) Community systems shall comply with local zoning ordinances and be approved by the Modoc County Planning Department.

### **36.0 Sewage Disposal Service Registrations**

- (1) Registration required. A person may not perform sewage disposal services or advertise or represent himself as being in the business of performing such services without a valid Registration issued by MCEH to perform those services. A separate Registration is required for each business, organization, or other person conducting sewage disposal services.
- (2) The duration of a sewage disposal service Registration may not exceed three years following the date of issuance. MCEH may issue Registrations for periods of less than three years to adjust for a calendar year renewal. MCEH will provide Registrations written notice of the expiration date assigned and date application for renewal is due.
- (3) Requirements for pumping vehicles and equipment. A Registrations who pumps onsite systems must ensure that all pumping vehicles and equipment comply with the following requirements.
  - (a) Tanks used for pumping or transporting septage must:
    - (A) Have a liquid capacity of at least 550 gallons, except that tanks for equipment used exclusively for pumping chemical toilets not exceeding 80 gallons capacity must have a liquid capacity of at least 150 gallons;
    - (B) Be of watertight metal construction;
    - (C) Be fully enclosed; and
    - (D) Have suitable covers to prevent spillage.
  - (b) Vehicles used for pumping or transporting septage must be equipped with either a vacuum or other type of pump that is self-priming and will not allow seepage from the diaphragm or other packing glands.
  - (c) The sewage hose on vehicles must be drained, capped, and stored in a manner that will not create a public health hazard or nuisance.
  - (d) The discharge nozzle must be:



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- (A) Provided with either a camlock quick coupling or threaded screw cap;
    - (B) Sealed by threaded cap or quick coupling when not in use;
    - (C) Located to minimize flow or drip onto any portion of the vehicle;
    - (D) Protected from accidental damage or breakage.
  - (e) Pumping equipment must not have spreader gates.
  - (f) Each vehicle must at all times be supplied with a pressurized wash-water tank, disinfectant, and implements for cleanup.
  - (g) Except as specified in subsection (h) of this section or otherwise authorized in writing by the agent, pumping equipment must be used exclusively for pumping sewage disposal facilities.
  - (h) The following may be pumped or serviced using pumping equipment without written authorization, whether or not they are connected to an onsite system or a centralized community sewer system: pump stations, lift stations, food grease tanks, vaults or tanks used for domestic sewage not contaminated with industrial or hazardous waste, and spills and backups of uncontaminated domestic sewage.
  - (i) Chemical toilet pumping equipment may not be used for any other purpose if the pump tank has a liquid capacity of less than 550 gallons.
  - (j) Equipment must be maintained in a reasonably clean condition at all times and must be operated in a manner that does not create a public health hazard or nuisance.
- (4) Vehicle identification. The onsite sewage disposal services Registrations must identify vehicles as follows.
- (a) The Registrations's name or assumed business name must be displayed on both sides of the vehicle or the attached tank and on both sides of a tank trailer.
    - (A) Letters must be at least 3 inches high unless otherwise authorized by DEQ.
    - (B) Letters must be in a color contrasting with the background.
  - (b) Tank capacity must be printed on both sides of the tank.
    - (A) Letters must be at least 3 inches high unless otherwise authorized by DEQ.
    - (B) Letters must be in a color contrasting with the background.
- (5) Septage management requirements. The Registrations and all persons managing septage:
- (a) Must avoid spilling sewage or septage during pumping, cleaning, or transport and must immediately clean up any spill and disinfect the spill area.
  - (b) Must dispose of septage and sewage only in disposal facilities approved by MCEH.
  - (c) At all times during pumping, transport, or disposal of septage, must possess origin-destination records for sewage disposal services rendered.
  - (d) Must maintain on file for at least 3 years complete origin-destination records for sewage disposal services rendered. The records must be made available for review upon the request of MCEH. Origin and destination records must include the following information for each pumping, transport, and disposal occurrence:
    - (A) Source of septage, including name and address;
    - (B) Specific type of material pumped;
    - (C) Quantity of material pumped;
    - (D) Name and location of disposal site where septage was deposited;
    - (E) Quantity of material deposited; and
    - (F) The Registration numbers or vehicle numbers assigned by the Registrations for all vehicles or trailers used for pumping, transport, and disposal.
  - (e) Must transport septage in a manner that will not create a public health hazard or nuisance
  - (f) Must possess a current septage management plan approved by MCEH. The plan must be kept current, with any revisions approved by MCEH before implementation.



## CONSTRUCTION STANDARDS

### **37.0 Tank Construction**

The following construction and manufacturing requirements apply to all septic tanks, holding tanks, dosing tanks, multiple-compartment combination septic and dosing tanks, and dosing septic tanks manufactured for use in Modoc County.

- (1) Compartments.
  - (a) Single-compartment tank can only be used as a dose tank.
  - (b) Multiple-compartment tanks must comply with the following requirements:
    - (A) The liquid capacity of the first compartment must be at least 2/3 of the total required liquid capacity, as measured from the invert elevation of the first compartment's outlet Tee fitting;
    - (B) A compartment may not have an inside horizontal dimension of less than 24 inches.
  - (c) The liquid depth of any compartment must be at least 30 inches. Liquid depths greater than 72 inches may not be considered in determining the working liquid capacity unless the tank has a capacity greater than 3,000 gallons.
- (2) Service access manhole. All tanks must have a service access manhole measuring at least 18 inches across its shortest dimension in each compartment.
- (3) Watertightness. After installation, all tanks must be watertight. The installer must test each tank for watertightness by filling the tank to a point at least 2 inches above the point of riser connection to the top of the tank. During the test there may be no more than a one gallon leakage over a 24 hour period. The tank manufacturer must deliver watertight tanks and should test each tank for watertightness before the tank is shipped from the manufacturing plant.
- (4) If the tank manufacturer does not fully assemble the tank, as with a two-piece concrete tank, the manufacturer must provide the bonding and sealing agents and an instruction manual for assembling the tank.
- (5) Structure: All tanks must be able to support an earth load of at least 300 pounds per square foot when the maximum coverage does not exceed 3 feet. Tanks installed with more than 3 feet of cover must be reinforced to support the additional load. Lateral load must be 62.4 pcf of equivalent fluid pressure (EFP). Tanks must be able to withstand long-term external hydrostatic loads in addition to soil loads. Internal hydrostatic pressures must be omitted to allow for septage pumping during critical groundwater conditions. A 2,500 pound wheel load concentrated over the critical elements of the tank shall also be considered.
- (6) Service access riser and cover. All tanks must be manufactured to accommodate installation of a watertight service access riser above one service access manhole. The riser must have a minimum nominal diameter of 20 inches when tank burial depths do not exceed 36 inches. Tanks designed for burial depths deeper than 36 inches must also be designed to accommodate installation of a 30-inch minimum diameter service access riser above each service access manhole. A gasketed riser cover must be provided and securely fastened or weighted to prevent unauthorized access.
- (7) Inlet and outlet Tee fittings.
  - (a) The inlet and outlet Tee fittings must be of Schedule 40 P.V.C. plastic, Schedule 40 ABS plastic, or other equally durable materials approved by the department with a minimum diameter of 4 inches.
  - (b) The distance between the inlet and outlet Tee fittings in a single-compartment tank must at least equal the liquid depth of the tank.
  - (c) The inlet and outlet Tee fittings in a single compartment tank, where applicable, must be located at opposite ends of the tank. The inlet Tee fitting must be readily accessible by way of a watertight, 8-inch minimum diameter riser (with cover) and access hole positioned directly above the inlet Tee. The fittings must be attached in a watertight manner acceptable to the



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department.

- (d) The inlet fitting in all single-compartment tanks, except dosing tanks, and in each compartment of multiple-compartment tanks, must be a "sanitary tee" extending at least 6 inches above and at least 12 inches below the normal high and low liquid levels, respectively.
- (e) The outlet Tee fitting, holes, or ports provided in a vault or outlet effluent filter must be positioned to withdraw effluent horizontally from the clear zone at an elevation measured from the inside bottom of the tank to 65 to 75 percent of the lowest operating liquid depth. The net area of the ports must be at least 6 square inches. The outlet fitting in single-compartment tanks and in each compartment of multiple-compartment tanks must extend at least 6 inches above the highest normal liquid depth to provide scum storage. When the single-compartment tank is used as a holding tank, dosing septic tank, or dosing tank, the outlet Tee fitting must be provided with a watertight plug or omitted. The outlet Tee fitting may also be plugged or omitted in the last compartment of a multiple-compartment tank when a pump or siphon is placed in that last compartment.
- (f) Ventilation must be provided through the fittings by means of a 2-inch minimum space between the top of the inlet Tee fittings and the adjacent tank surfaces.
- (g) The invert of the inlet fitting must be at least 1 inch and preferably 3 inches above the invert of the outlet fitting or the highest normal liquid level.
- (h) A convenient means of monitoring sludge and scum accumulation must be provided, with access extending to ground level.
- (i) The tank manufacturer must provide with each Tee fitting an appropriate coupler that will provide a watertight connection between the fittings and the building and effluent sewer pipes.
- (8) At least 10% of the inside volume of a tank must be above the highest normal liquid level to provide scum storage and reserve.
- (9) Tanks shall be constructed of concrete, fiberglass, or other noncorrosive materials approved by the department. All tanks shall be approved a California Registered Engineer and be supplied with a specification sheet detailing design and installation criteria.
- (10) All prefabricated tanks must be marked on the uppermost tank surface over the outlet with the liquid capacity of the tank, the burial depth limit, date of manufacture, and the manufacturer's full business name.
- (11) A septic tank used for primary treatment or two compartment tank cannot be used as a dosing tank.

### **38.0 Distribution Boxes**

- (1) Distribution boxes must be constructed of concrete, fiberglass, or other materials acceptable to the department.
- (2) Distribution boxes must be constructed of durable, watertight materials resistant to deterioration and be designed to accommodate watertight connections for the effluent sewer and header pipes. The top, walls, and bottom of concrete distribution boxes must be at least 1-1/2 inches thick. All distribution boxes must be able to support an earth load of at least 200 pounds per square foot.
- (3) The invert elevation of all outlets must be the same and must be at least 2 inches below the inlet invert.
- (4) Each distribution box must be provided with a sump extending at least 2 inches below the invert of the outlets unless otherwise authorized by the department.

### **39.0 Drop Boxes**

- (1) Drop boxes must be constructed of concrete, fiberglass, or other materials acceptable to the department.
- (2) Drop boxes must be constructed of durable, watertight materials resistant to deterioration and be



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designed to accommodate watertight connections for the effluent sewer and header pipes. The top, walls, and bottom of concrete drop boxes must be at least 1-1/2 inches thick. All drop boxes must be able to support an earth load of at least 200 pounds per square foot.

- (3) The inverts of the inlet and overflow port must be at the same elevation. The invert of the header pipe port(s) leading to the absorption trench(es) must be 6 inches below the inlet invert unless otherwise approved by the agent.

## **40.0 Filter Fabric**

Except as otherwise allowed by the department, filter fabric used as a barrier between the lower lens of drain media and the medium sand in a conventional sand filter system must meet the following specifications:

- (1) Material synthetic fabric, either spunbonded or woven.
- (2) Burst strength not less than 25 psi.
- (3) Air permeability not less than 500 cfm per sq. ft.
- (4) Water flow rate not less than 500 gpm per sq. ft. at 3 inches of head.
- (5) Hydrophilic surface reaction to water.
- (6) Equivalent opening size of 70 to 100 sieve.
- (7) Chemical properties:
  - (a) Nonbiodegradable.
  - (b) Resistant to acids and alkalis within a pH range of 4 to 10.
  - (c) Resistant to common solvents.

## **41.0 Diversion Valves**

- (1) Diversion valves must be constructed of material that is durable, corrosion-resistant, watertight, and designed to accommodate the inlet and outlet pipes in a secure and watertight manner.
- (2) Diversion valves must be constructed with access to finished grade and large enough to provide for ease of operation and service of valve.

## **42.0 Dosing Tanks**

- (1) Dosing tanks must be single compartment meet the material standards described for septic tanks.
- (2) Each dosing tank employing one or more pumps must have a minimum liquid capacity equal to the projected daily sewage flow for flows up to 1,200 gallons per day. The department will determine tank sizing for dosing tanks with projected daily sewage flows greater than 1,200 gallons per day. The liquid capacity of dosing tanks must be as measured from the invert elevation of the inlet fitting.
- (3) Each dosing tank must be provided with a service access manhole having a minimum horizontal measurement of 18 inches.
- (4) Each dosing tank proposed to serve a commercial facility containing more than one pump or siphon must be provided with at least one service access manhole that provides adequate space to construct, install, service, and operate the equipment in accordance with the requirements of the permit or manufacture.
- (5) The installation manual must include additional information about siphon selection, installation of the pump or siphon screen, pump control and alarm levels, and the watertight pass-through methods for electric wiring and pipe.
- (6) Dosing tanks with siphons must be designed and sized for each specific project. The tank manufacturer must specify the type or model of siphon, screen, and related apparatus that are compatible with each dosing tank.
- (7) The inlet fitting must extend below the lowest operating level of the pump or siphon.



## **43.0 Dosing Assemblies: Effluent Pumps, Controls and Alarms, and Dosing Siphons**

- (1) Design and equipment must emphasize ease of maintenance, longevity, and reliability of components and must be proven suitable by operational experience, test, or analysis acceptable to the department.
- (2) Easy means of electrical and plumbing disconnect must be provided. All apparatus must be constructed and installed to facilitate ease of service without having to alter any other component.
- (3) Component materials must be durable and corrosion-resistant such as Type 316 stainless steel, suitable plastics, or 85-5-5-5 bronze.
- (4) Pumps, Siphons, Controls, and Alarms. All pumps, siphons, controls and related apparatus must be field tested under working conditions and found to operate and perform satisfactorily. Electrical components used in onsite systems must comply with applicable requirements of the State of California Electrical Code and the standards in this section.
  - (a) Motors must be continuous-duty with overload protection.
  - (b) Pumps must have durable impellers of bronze, cast iron, or other materials approved by the department.
  - (c) Submersible pumps must be provided with an easy, readily accessible means of electrical and plumbing disconnect and a noncorrosive lifting device as a means of removal for servicing.
  - (d) Except where specifically authorized in writing by the agent, the pump or siphon must be placed within a corrosion-resistant screen or vault with a filtering device that extends into or above the tank's service access manhole. The screen or filtering device must have at least 12 square feet of surface area, with 1/8-inch openings. In lieu of the screen, the agent may allow other methods with equal or better performance in preventing the passage of suspended solids to the pump or siphon.
  - (e) Pumps must be automatically controlled by float switches with a minimum rating of 12 amps at 115 volts A.C. or by a department-approved, equally reliable switching mechanism. Except as otherwise required in this division, the switches must be installed so that no more than 20% of the projected daily sewage flow is discharged each cycle. The pump "off" level must be set to maintain the liquid level above the top of the pump or to the designer and pump manufacturer's specifications.
  - (f) An audible and visual high water level alarm with manual silence switch must be located in or near the building served by the pump. Only the audible alarm may be user-cancelable. The switching mechanism within a dosing tank or chamber controlling the high water level alarm must be located so that at time of activation the tank has a remaining volume equal to 1/3 or more of the system's design flow, as measured below the invert of the inlet, for effluent storage. The alarm and pump must be on separate circuits. Commercial applications using duplex pumps are not subject to the 1/3 storage reserve requirement.
  - (g) When a system has more than one pump, the department may require the pumps to be wired into the electrical control panel to function alternately after each pumping cycle. If either pump should fail, the other pump will continue to function while the high water level alarm activates. A cycle counter must be installed in the electrical control panel for each pump.
  - (h) All pump installations must be designed with adequate sludge storage volume below the effluent intake level of the pump.
  - (i) All commercial systems with a design flow greater than 600 gallons must be constructed in duplex (two or more alternating pumps) unless otherwise authorized in writing by the department. Controls must be provided such that an alarm will signal when one of the pumps malfunctions.
  - (j) All pumps serving commercial systems must be operated through a pre-manufactured electrical



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control panel. A means of monitoring pump performance through the use of elapsed-time meters and cycle counters is required.

- (k) Where multiple pumps are operated in series, an electrical control panel must be installed to prevent the operation of a pump or pumps preceding a station that experiences a high level alarm event.

(5) Dosing Siphons. Dosing siphons used in onsite systems must comply with the following minimum requirements.

- (a) The siphon must be constructed of corrosion-resistant materials.
- (b) The siphon must be installed within a compatible tank in accordance with the siphon manufacturer's recommendations.
- (c) The siphon manufacturer must provide installation and maintenance instructions to the owner.
- (d) The installation must include a device that tracks the operation of the siphon by measuring cycle events and records them by means of an event counter mounted within the dwelling or structure served.

### **44.0 Effluent Filters**

(1) Effluent filters used in onsite systems must meet the following criteria.

- (a) Filters must be of durable, resilient, corrosion resistant, non-degradable materials resistant to deformation under normal operating conditions.
- (b) Filters must be designed to prevent the escape of sludge or scum during normal operation and in the event of a malfunction, including filter clogging.
- (c) The filter must retain all particles greater than 3/16 inch.
- (d) The filter assembly must baffle the sludge and scum layers to prevent the escape of gross solids during sludge bulking or gas ebullition.
- (e) Filters must be designed and positioned to allow for easy, trouble-free removal from and reinstallation to the screen apparatus from the assembly.
- (f) The assembly must be capable of withstanding stresses placed upon it by installation, operation, and service.
- (g) The assembly in the septic tank must perform as a conventional tank outlet that meets the requirements of 37.0 Tank Construction(6) when the filter is removed.
- (h) The filter must be designed to handle the flow of the system it is to serve without excessive maintenance. For a single family dwelling, maintenance is considered "excessive" when the filter requires service or cleaning more than one time per year. Service must be performed each time the tank is pumped and in accordance with the manufacturer's specifications.
- (i) To obtain department approval, the manufacturer of an effluent filter must provide the department with the necessary technical data to show that the design and materials comply with this rule. The manufacturer must provide an operation and maintenance manual with each unit distributed.
- (j) Effluent filter units external to the tank must be watertight.

### **45.0 Pipe Materials and Construction**

- (1) Effluent Sewer Pipe: The effluent sewer must be constructed with materials in conformance with state building sewer standards. The effluent sewer pipe must have a minimum diameter of 3 inches. When the septic tank is fitted with an effluent filter, the minimum nominal diameter of piping may be reduced to 1-1/4 inches.
- (2) Underdrain pipe. Underdrain pipe must meet or exceed the requirements for Class 125 PVC pressure pipe as identified in ASTM Specification D 2241. The pipe and fittings must be marked as required by ASTM Specification D 2241. The underdrain pipe must be perforated in accordance with subsection (4)(d) of this rule or with 1/4-inch slots cut halfway through the pipe at 4 inches center to center.



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- (3) Polyvinyl chloride (PVC) pressure transport pipe, pressure manifolds, and pressure lateral pipe and fittings must meet or exceed the current requirements for Class 160 PVC 1120 pressure pipe as identified in ASTM Specification D 2241. The pipe and fittings must be marked as required by ASTM Specification D 2241. For pipe diameters of 1 inch or less, the minimum pressure rating is 200 pounds per square inch (psi). For pipe diameters greater than 1 inch, the minimum pressure rating is 160 psi.
- (4) Distribution and Header Pipe and Fittings.
  - (a) Polyethylene distribution pipe in 10 foot lengths and header pipe in lengths of 10 feet or greater must meet the current ASTM Specification F 405. Pipe and fittings must also pass a deflection test withstanding 350 pounds per foot without cracking or collapsing using the method in ASTM 2412. Pipe used in absorption facilities must be heavy duty. Markings must meet requirements in ASTM F 405.
  - (b) Polyvinyl chloride (PVC) distribution and header pipe and fittings must meet the most current ASTM Specification D 2729. Pipe and fittings must pass a deflection test withstanding 350 pounds per foot without cracking or collapsing using the method found in ASTM 2412. Markings must meet requirements in ASTM Specification D 2729.
  - (c) Polyethylene smooth wall distribution and header pipe in 10-foot length and fittings must meet the most current ASTM Specification F 810. Pipe and fittings must also pass a deflection test of 350 pounds per foot without cracking or collapsing by using the method found in ASTM 2412. Markings shall meet the requirements in ASTM Specification F 810, Section 9.
  - (d) The three types of plastic pipe described above must have two rows of holes spaced 120 degrees apart and 60 degrees on either side of a center line. For distribution pipe, a line of contrasting color must be provided on the outside of the pipe along the line furthest away and parallel to the two rows of perforations. Durable ink markings must cover at least 50% of the pipe. Markings may consist of a solid line, letters, or a combination of the two. Intervals between markings must not exceed 12 inches. The holes of each row may not be more than 5 inches on center and must have a minimum diameter of 1/2 inch.

### **46.0 Nonwater-Carried Waste Disposal Facilities, Materials, and Construction**

#### **Privies and Portable Toilet Shelters**

- (1) Privies and portable toilet shelters must comply with the following general requirements.
  - (a) Structures must be free of hostile surface features, such as exposed nail points, sharp edges, and rough or broken boards, and must provide privacy and protection from the elements.
  - (b) Building ventilation must be equally divided between the bottom and top halves of the room and must be adequate to allow for the free escape of gases and odors. All vents must be screened with 16 mesh screen of durable material.
  - (c) Buildings must be of fly-tight construction and must have self-closing doors with an inside latch.
  - (d) Pits, tanks, or vaults must be vented to the outside atmosphere by a flue or vent stack having a minimum inside diameter of 4 inches. Vents must extend at least 12 inches above the roof.
  - (e) Interior floors, walls, ceilings, partitions, and doors must be finished with readily cleanable, impervious materials resistant to wastes, cleansers, and chemicals. Floors and risers must be constructed of impervious material and prevent entry of vermin.
- (2) Portable Toilet Shelters. Portable toilet shelters may be prefabricated, skid mounted, or mobile. In addition to the requirements in section (1) of this rule, portable toilet shelters must:
  - (a) Provide at least 1 square foot of screened ventilation to the outside atmosphere for each seat;
  - (b) Provide at least 9 square feet of floor space for each seat;
  - (c) Be furnished with a toilet tissue holder for each seat;



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## Modoc County Onsite Wastewater Treatment System LAMP

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- (d) Be located in areas readily accessible to users and to pumping and cleaning services; and
- (e) Provide separate compartments with doors and partitions or walls of sufficient height to insure privacy in multiple-unit shelters except that separate compartments are not required for urinals.

### **47.0 Unsealed Earth Pits for Privies**

- (1) The pit must be constructed with material and in a manner to prevent rapid deterioration, provide adequate capacity, and facilitate maintenance under ordinary use.
- (2) Unless otherwise approved by the agent, the pit must provide a capacity of 50 cubic feet for each seat installed in the privy building and must be at least 5 feet deep. The area within 16 inches of the surface grade may not be counted as part of the 50 cubic-foot capacity.
- (3) Pit cribbing must fit firmly and be in uniform contact with the earth walls on all sides and must rise at least 6 inches above the original ground line and descend to the full depth of the pit. Pit cribbing below the soil line may be omitted in rock formations.

### **48.0 Self-Contained Nonwater-Carried Toilet Facilities**

- (1) General Standards. All self-contained, nonwater-carried toilet facilities must comply with the following requirements.
  - (a) They must have water-tight chambers constructed of reinforced concrete, plastic, fiberglass, metal, or other material of acceptable durability and corrosion resistance, approved by the department, and designed to facilitate the removal of the wastes.
  - (b) Black wastes must be stored in an appropriate chamber until removal for final treatment elsewhere. Wastes must be removed from the chamber whenever necessary to prevent overflow.
  - (c) Chemicals containing heavy metals such as copper, cadmium, and zinc, must not be used in self-contained toilet facilities.
  - (d) All surfaces subject to soiling must be impervious, easily cleanable, and readily accessible.
- (2) Vault Toilet Facilities.
  - (a) The capacity of vaults must be at least 350 gallons or, in places of employment, 100 gallons per seat.
  - (b) Caustic must be added routinely to vault chambers to control odors.
- (3) Chemical Toilet Facilities.
  - (a) Toilet bowls must be constructed of stainless steel, plastic, fiberglass, ceramic, or other material approved by the department.
  - (b) Waste passages must have smooth surfaces and be free of obstructions, recesses, or cross braces that would restrict or interfere with flow of black wastes.
  - (c) Biocides and oxidants must be added to waste detention chambers at rates and intervals recommended by the chemical manufacturer and approved by the department.
  - (d) Chambers and receptacles must provide a minimum storage capacity of 50 gallons per seat.
  - (e) Portable shelters housing chemical toilets must display the business name of the licensed sewage disposal service that is responsible for servicing them.

### **49.0 Construction of Gray Water Waste Disposal Systems**

- (1) A gray water waste disposal system must consist of a minimum 1,000 gallon tank that complies with tank construction standards in this policy, and an absorption trench designed to 2/3 capacity of a standard OWTS system. All other components shall meet the material qualities described within this policy or specifically approved by MCEH.
- (2) Absorption trenches shall be constructed to prevent surfacing effluent and contamination of a permanent groundwater table. Gray water systems are designed as a water saving system that is



## Modoc County Onsite Wastewater Treatment System LAMP

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intended to reduce the use of potable water for landscape irrigation.

(3) No black waste can be disposed of in the gray water system. Black waste can be handled by a non-water system, holding tank, or standard OWTS design.

### **50.0 Flexible Membrane Liners for Sand Filters Treating Septic Tank Effluent**

(1) Unsupported polyvinyl chloride (PVC) must have the following properties (Property -- Test Method).

- (a) Thickness -- ASTM D1593, Para 9.1.3, 30 mil, minimum
- (b) Specific Gravity (minimum) -- ASTM D792, Method A
- (c) Minimum Tensile Properties (each direction) -- ASTM D882
  - (A) Breaking Factor (pounds/inch width) -- Method A or B (1 inch wide), 69
  - (B) Elongation at Break (percent) -- Method A or B, 300
  - (C) Modulus (force) at 100% Elongation (pounds/inch width) -- Method A or B, 27
- (d) Tear Resistance (pounds, minimum) -- ASTM D1004, Die C, 8
- (e) Low Temperature -- ASTM D1790, -20° F
- (f) Dimensional Stability (each direction, percent change maximum) -- ASTM D1204, 212° F, 15 min., ±5
- (g) Water Extraction -- ASTM D1239, 0.35% max
- (h) Volatile Loss -- ASTM D1203, Method A, 0.7% max
- (i) Resistance to Soil Burial (percent change maximum in original value) -- ASTM D3083:
  - (A) Breaking Factor, -5
  - (B) Elongation at Break, -20
  - (C) Modulus at 100% Elongation, ±10.
- (j) Bonded Seam Strength (factory seam, breaking factor, ppi width) -- ASTM D3083, 55.2
- (k) Hydrostatic Resistance -- ASTM D751, Method A, 82.

(2) Installation Standards.

- (a) Patches, repairs, and seams must have the same physical properties as the parent material.
- (b) Site considerations and preparation.
  - (A) The supporting surface slopes and foundation to accept the liner must be stable and structurally sound with appropriate compaction. Particular attention must be paid to the potential of sink hole development and differential settlement.
  - (B) Soil stabilizers such as cementations or chemical binding agents may not adversely affect the membrane; cementations and chemical binding agents may be potentially abrasive agents.
- (c) Only fully buried membrane liner installation may be considered to avoid weathering.
- (d) Unreinforced liners have high elongation and can conform to irregular surfaces and follow settlements within limits. Unreasonable strain reduces effective thickness and may reduce life expectancy by lessening the chemical resistance of the thinner (stretched) material. Every effort must be made to minimize the strain (or elongation) anywhere in the flexible membrane liner.
- (e) Construction and installation.
  - (A) Surface condition.
    - (i) Preparation of earth subgrade. The prepared subgrade must be of soil types no larger than Unified Soil Classification System (USCS) sand (SP) to a minimum of 4 inches below the surface and free from loose earth, rock, fractured stone, debris, cobbles, rubbish and roots. The surface of the completed subgrade must be properly compacted, smooth, uniform, and free from sudden changes in grade. Importing suitable soil may be required.
    - (ii) Maintenance of subgrade. The earth subgrade must be maintained in a smooth, uniform, and compacted condition during installation of the lining.



## Modoc County Onsite Wastewater Treatment System LAMP

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(B) Climatic conditions.

- (i) Temperature. Placing liner outside the desirable temperature range must be avoided. The desirable temperature range for membrane installation is 42° F. to 78° F. Lower or higher temperatures may have an adverse effect on transportation, storage, field handling, and placement, seaming, and backfilling; and attaching boots and patches may be difficult.
- (ii) Wind. Placing the liner in high wind must be avoided. Wind may have an adverse effect on liner installation such as interfering with liner placement. Mechanical damage may result. Cleanliness of areas for boot connection and patching may not be possible. Alignment of seams and cleanliness may not be possible.
- (iii) Precipitation. Seaming, patching, and attaching "boots" must be done under dry conditions. When field seaming is adversely affected by moisture, portable protective structures and other methods must be used to maintain a dry sealing surface. Proper surface preparation for bonding boots and patches may not be possible.

(C) Structures. Where penetrations are necessary, liners must be attached to pipes with a mechanical type seal supplemented by a chemically compatible caulking or adhesives to effect a liquid-tight seal. Maximum compaction must be provided in the area adjacent to pipes to compensate for any settlement.

(D) Liner Placement.

- (i) Size. The final cut size of the liner must be carefully determined and ordered to generously fit the container geometry without field seaming or excess straining of the liner material.
- (ii) Transportation, handling, and storage. Transportation, handling, and storage procedures must be planned to prevent material damage. Material must be stored in a secured area and protected from adverse weather.
- (iii) Site inspection. A site inspection must be carried out by the agent and the installer before liner installation to verify surface conditions and other conditions important to installation.
- (iv) Deployment. Panels must be positioned to minimize handling. Seaming should not be necessary. Bridging or stressed conditions must be avoided with proper slack allowances for shrinkage. The liner must be secured to prevent movement and promptly backfilled.
- (v) Anchoring trenches. The liner edges must be secured frequently in a backfilled trench.
- (vi) Field seaming. Field seaming, if absolutely necessary, must be attempted only when weather conditions are favorable. The contact surfaces of the materials must be clean of dirt, dust, moisture, or other foreign materials. The contact surfaces must be aligned with sufficient overlap and bonded in accordance with the suppliers recommended procedures. Wrinkles must be smoothed out and seams must be inspected by nondestructive testing techniques to verify their integrity. As seaming occurs during installation, the field seams must be inspected continuously, and any faulty area repaired immediately.
- (vii) Field repairs. Traffic on the lined area must be minimized. Any necessary repairs to the liner must be patched using the same lining material and following the recommended procedure of the supplier.
- (viii) Final inspection and acceptance. Completed liner installations must be visually checked for punctures, rips, tears, and seam discontinuities before placement of any backfill. At this time the installer must also manually check all factory and field seams with an appropriate tool. In lieu of or in addition to manual checking seams, either of the following tests may be performed:



## Modoc County Onsite Wastewater Treatment System LAMP

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- (I) Wet Test. The lined basin must be flooded with water to the 1-foot level after inlets and outlets have been plugged. There may not be any loss of water in a 24 hour test period.
- (II) Air Lance Test. All bonded seams must be checked using a minimum 50 PSI (gauge) air supply directed through a 3/16 inch (typical) nozzle held not more than 2 inches from the seam edge and directed at the seam edge. Riffles indicate unbonded areas within the seam or other undesirable seam construction.



# Modoc County Onsite Wastewater Treatment System LAMP

**Table 1**  
**Minimum Separation Distances**

Items Requiring Setback	From Subsurface Absorption Area Including Replacement Area	From Septic Tank and Other Treatment Units, Effluent Sewer and Distribution Units
Groundwater Supplies and Wells*	100'	50'
Surface Waters - Year round**	100'	50'
Surface Waters - Seasonal**	50'	50'
Groundwater Interceptors	20'	10'
Irrigation Canals - Lined	25'	25'
Irrigation Canals - Unlined (Upgradient/Downgradient)	25'/50'	25'/50'
Downgradient Escarpments/Cuts Which Intersect Layers that Limit Effective Soil Depth	50'	25'
Downgradient Escarpments/Cuts Which Do Not Intersect Layers that Limit Effective Soil Depth	25'	10'
Property Lines	5'	10'
Water Lines	10'	10'
Foundation Lines of Any Building	10'	5'
Underground Utilities	10'	-
*Additional setbacks for public water systems are in section 9.4.10, 9.4.11, and 9.4.12 in the State Water Resources Control Board OWTS Policy.		
** Does not prevent stream crossings of pressure effluent sewers.		
If the Health Officer has determined that there is inadequate area to obtain the distances required in Table 1, he or she may nevertheless approve the construction of the system if it is a replacement system and a reasonable low risk assessment to public health and the environment can be made.		



# Modoc County Onsite Wastewater Treatment System LAMP

**TABLE 2**  
**Quantities of Sewage Flows**

Type of Establishment		Gallons Per Day*	Minimum gallons Per Establishment Per Day*
Airports		5 (per passenger)	150
Bathhouses and swimming pools		10 (per person)	300
Camps: (4 persons per campsite, where applicable)	Campground w/central comfort stations	35 (per person)	700
	W/ flush toilets, no showers	25 (per person)	500
	Construction camps- semi permanent	50 (per person)	1000
	Day camps- no meals served	15 (per person)	300
	Resort camps (day/night) w/ limited plumbing	50 (per person)	1000
	Luxury camps	100 (per person)	2000
Churches		5 (per seat)	150
Country clubs (per resident member)		100 (per resident member)	2000
County clubs (per non-resident member present)		25 – (per non-resident member)	0
Dwellings	Boarding houses	150 (per bedroom)	600
	Boarding houses- additional for non-residential boarders	10 (per person)	0
	Rooming Houses	80 (per person)	500
	Condominiums, multiple family dwellings – including apartments	300 (per unit)	900
	Single Family dwellings	300 (not exceeding 2 bedrooms)	300
	Single family dwellings with 3 or more bedrooms	75 (fourth & each succeeding bedroom)	450
Factories (exclusive of industrial waste- w/shower facilities)		35 (per person per shift)	300
Factories (exclusive of industrial waste- w/o shower facilities)		15 (per person per shift)	150
Hospitals		250 (per bed space)	2500
Hotels with private baths		120 (per room)	600
Hotels without private baths		100 (per room)	500
Institutions other than hospitals		125 (per bed space)	1250
Laundries-self service		500 (per machine)	2500
Mobile home parks		250 (per space)	750
Motels – w/ bath, toilet, and kitchen waste		100 (per bedroom)	500
Motels- w/o kitchens		80 (per bedroom)	400
Picnic Parks- toilet waste only		5 (per picnicker)	150
Picnic Parks- w/ bathhouses, showers, and flush toilets		10 (per picnicker)	300
Restaurants		40 (per seat)	800
Restaurants – single service		2 (per customer)	300
Restaurants – w/ bars and/or lounges		50 (per seat)	1000
Schools	Boarding	100 (per person)	3000
	Day – w/o gyms, cafeterias, or showers	15 (per person)	450
	Day – w/ gyms, cafeterias and showers	25 (per person)	750
	Day – w/ cafeteria, but w/o gyms or showers	20 (per person)	600
Service Stations		10 (per vehicle served)	500
Swimming pools and bathhouses		10 (per person)	300
Theater	Movie	5 (per seat)	300
	Drive-In	20 (per car space)	1000
Travel Trailer Parks – w/o individual water and sewer hookups		50 (per space)	300
Travel Trailer Parks – w/ individual water and sewer hookups		100 (per space)	500
Workers	Construction – as semi permanent camps	50 (per person)	1000
	Day – at schools and offices	15 (per shift)	150
*The agent may reduce the above design flow estimates as provided in this policy.			



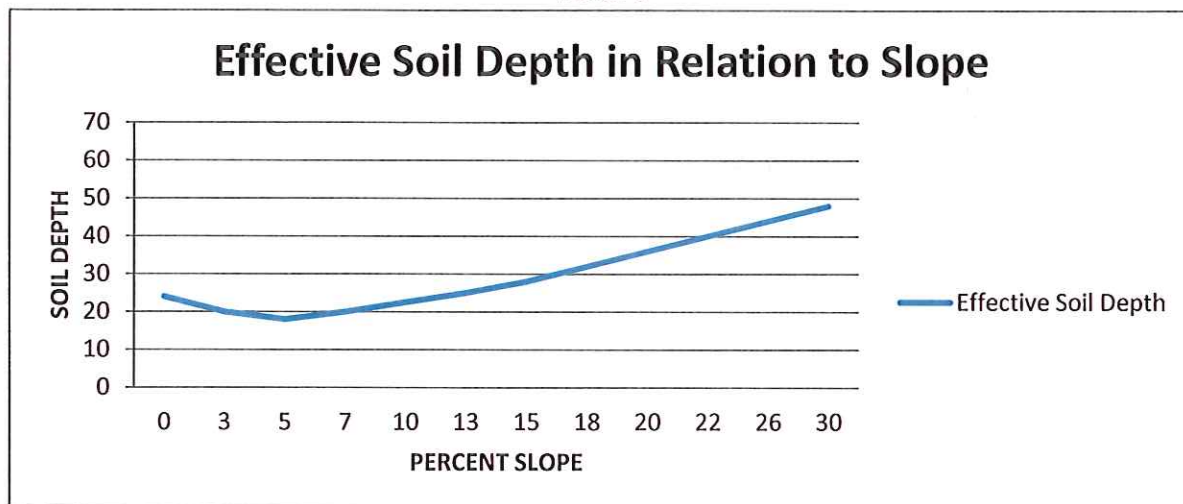
# Modoc County Onsite Wastewater Treatment System LAMP

**TABLE 3**

**Design Soil Application Rates\***

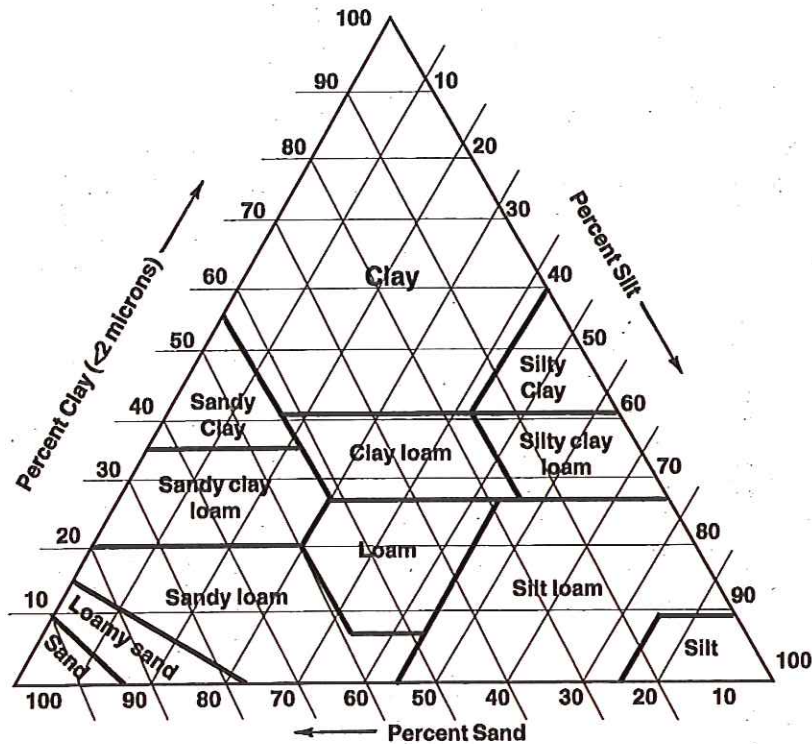
Absorption rates per 150 gallons projected daily sewage flow determined from soil texture verses effective soil depth.									
	Linear Leach Length Calculation per Bedroom						Bottom Area + sidewall 24" + 12" = 36"		
	Linear feet 2'			Linear feet 3' (chamber only)			Equivalent Application Rate (gal/day/ft2)		
	Soil Group			Soil Group			Soil Group		
Effective Soil Depth	A	B	C	A	B	C	A	B	C
18" to less than 24"	125	150	175	95	115	130	0.40	0.33	0.29
24" to less than 36"	100	125	150	75	95	115	0.50	0.40	0.33
36" to less than 48"	75	100	125	55	75	95	0.67	0.50	0.40
48"+	50	75	125	40	55	95	1.00	0.67	0.40
Soil Group A**	Sand, Loamy Sand, Sandy Loam.								
Soil Group B	Sandy Clay Loam, Loam, Silt Loam, Silt, Clay Loam.								
Soil Group C	Silty Clay Loam, Sandy Clay, Silty Clay, Clay								
*Agent may reduce the above design flow criteria as provided in this policy.									
* If sand grains are fine or very fine, site according to Group B soils.									

**Table 4**





**Table 5**  
**Soil Textural Classification Chart**



**Table 6**  
**USDA Soil Classification Sizes of Soil Separates**

Particle	Sieve Size	Millimeters
Clay	-	0.002
Silt	270	0.050
Very Fine Sand	200	0.075
	140	0.10
Fine Sand	60	0.25
Medium Sand	35	0.50
Coarse Sand	18	1.00
Very Coarse Sand	10	2.00
Fine Gravel	4	4.75
	3/8"	9.50
	1/2"	12.50
Coarse Gravel	3"	76.20
Cobbles	-	-



# Modoc County Onsite Wastewater Treatment System LAMP

**Table 7**

**Minimum Separation Distances for Nonwater -Carried Waste Disposal Facilities**

	Self-Contained Nonwater-Carried Waste Disposal	Unsealed Earth Type Privies, Graywater Waste Disposal Sump and Seepage Chambers
Groundwater supplies including springs and cisterns	50'	100'
Surface public waters, excluding intermittent streams	50'	100'
Intermittent streams	50'	50'
Property line	25'	25'

**Table 8**

**Minimum Depths to Permanent Groundwater According to Soil Type and Percolation Rate**

Percolation Rate	Soil Type	Minimum Depth From Bottom of Dispersal System*
1 MPI < TO ≤ 5 MPI	A -(structureless coarse sand)	Twenty (20) feet
5 MPI < TO ≤ 60 MPI	A/B	Eight (8) feet
60 MPI < TO ≤ 120 MPI	C	Five (5) feet
<p>*Minimum Depth can be reduced by 50% if a confining layer below the leach line is &gt; 6 inches, has a permeability rate &gt; 120 MPI or structure is massive, and (at a minimum) pressure distribution is used. Separation to permanent groundwater can be reduced to 24" in any soil type with supplemental treatment of effluent to Treatment Standards 1 or 2 as defined in this policy and approved by the agent.</p>		

## Modoc County Onsite Wastewater Treatment System LAMP

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**Table 9**  
**Septic Tank Sizing Criteria**

Dwelling - Number of Bedrooms	1 to 4	5 to 6
Tank Size	1,000 gal	1,500 gal
More than 6 bedrooms and all other facilities use the following design formulas:		
1) Waste/sewage flow, up to 1,500 gallons/day Flow x 1.5 = septic tank size		
2) Waste/sewage flow, over 1,500 gallons/day Flow x 0.75 + 1125 = septic tank size		



## **ATTACHMENTS**

## Annual Regional Water Quality Control Board Report

Page \_\_\_\_ of \_\_\_\_

## Reporting Period\_

[illegible]



Attachment 2

Page \_\_\_\_ of \_\_\_\_

## OWTS Permit Activity

## Reporting Period

[illegible]

## Annual Regional Water Quality Control Board Report

Modoc OWS Septage Registration Program

Page \_\_\_\_ of \_\_\_\_

[illegible]





## SITE MAP AND SYSTEM REQUIREMENTS

SKETCH NOT TO SCALE

LOCATION:

APPLICANT:

[illegible]

IDENTIFY ANY KNOWN EASEMENTS, WELLS, ROADS, DWELLING AREA, SYSTEM LOCATION, SITE EVAL LOCATION, DIRECTION, AND OTHER PERTINANT INFORMATION

SYSTEMS APPROVED ARE THE MINIMUM TO MEET CURRENT POLICY/RULES AND ARE NOT DESIGN SPECIFICATIONS

USE:	SEWAGE FLOW:	# BEDROOMS:	TANK SIZE:
SYSTEM TYPE APPROVED:			
ABSORPTION FACILITY DESIGN CRITERIA			
INITIAL:	MIN SIZE:	MAX DEPTH:	MIN DEPTH:
REPLACEMENT:	MIN SIZE:	MAX DEPTH:	MIN DEPTH:
SPECIAL CONDITIONS:			
EVALUATOR:	TITLE:	AGENCY:	PAGE 2 of



## Attachment 6

DATE:

ASPECT:

ASPECT:

GROUND WATER:

GROUND WATER:

GROUND WATER:

[illegible]

# Application for Onsite Waste Treatment System



Modoc County Environmental  
Health Department  
202 West 4<sup>th</sup> Street • Alturas, CA 96101  
Phone: (530) 233-6310 Fax: (530) 233-6342  
www.ch.co.modoc.ca.us

## For Office Use Only:

Date Received \_\_\_\_\_  
Fee Paid \_\_\_\_\_  
Application Number \_\_\_\_\_  
Date of 1<sup>st</sup> Inspection \_\_\_\_\_  
Date of 2<sup>nd</sup> Inspection \_\_\_\_\_  
Date of Final Inspection \_\_\_\_\_  
Date of Completion \_\_\_\_\_

Date Stamp

### A. Property Owner Information

Name \_\_\_\_\_ Mailing Address (Street or PO Box, City, State, Zip Code) \_\_\_\_\_ Phone Number \_\_\_\_\_

### B. Legal Property Description

Township \_\_\_\_\_ Range \_\_\_\_\_ Section \_\_\_\_\_ A.P.N. \_\_\_\_\_ Acreage or Lot Size \_\_\_\_\_

Subdivision Name \_\_\_\_\_ Lot \_\_\_\_\_ Block \_\_\_\_\_

Property Address: \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Directions to Property: \_\_\_\_\_

### C. Existing Facility/Proposed Facility/Water Information

#### Existing Facility:

☐ Single Family Residence

Number of Bedrooms \_\_\_\_\_

☐ Other \_\_\_\_\_

#### Proposed Facility:

☐ Single Family Residence

Number of Bedrooms \_\_\_\_\_

☐ Other \_\_\_\_\_

#### Water Supply:

☐ Public \_\_\_\_\_  
Name \_\_\_\_\_

☐ Private \_\_\_\_\_  
Well, Spring, Shared

### D. Type of Application

☐ Site Evaluation

☐ New Construction

☐ Standard

☐ Advance Treatment

☐ Gray Water

☐ Alternative Technology

☐ Holding Vault

☐ Water Saving Reduction Request

Include water saving questionnaire with application.

☐ Authorization Notice For:

☐ Replacing a Mobile Home or House with another Mobile Home or House

☐ The Addition of One or More Bedrooms

☐ Other Specify \_\_\_\_\_

☐ Permit Renewal

☐ Permit Repair

☐ Alteration Permit

☐ Major

☐ Major

☐ Minor

☐ Minor

If the required fee and attachments are not included with this application, it will be returned to you as incomplete. Post a flag or sign with your name and address at the entrance to the property. Flag and number test holes site evaluation.

By my signature, I certify that the information I have furnished is correct, and hereby grant Modoc County Environmental Health and its authorized agents permission to enter onto the above described property for purpose of this application.

Signature \_\_\_\_\_

Date \_\_\_\_\_

Applicant's Name - Please Print Legibly \_\_\_\_\_

Applicant's Phone Number \_\_\_\_\_

Applicant's Email Address \_\_\_\_\_

Applicant's Mailing Address \_\_\_\_\_

Applicant is the: ☐ Owner

☐ Authorized Representative

☐ Licensed Contractor

Contractors Name \_\_\_\_\_

☐ Authorization Attached





# EXISTING SEPTIC SYSTEM DESCRIPTION

(Use for Repair, Alteration or Authorization Notice)

Please answer the following questions as completely as possible, and to the best of your knowledge.

1. Your existing septic system consists of (check all that apply):

- ☐ Septic Tank      ☐ Disposal Trenches      ☐ Capping Fill      ☐ Sandfilter  
☐ Seepage Bed      ☐ Cesspool or Pit      ☐ Unknown  
☐ Other (Describe) \_\_\_\_\_

2. When was your septic system installed? \_\_\_\_\_

(Date)

(Permit Number)

3. Tank Material:      ☐ Concrete      ☐ Steel      ☐ Plastic or Fiberglass      ☐ Unknown

4. Septic Tank Volume (in gallons): \_\_\_\_\_

5. When was the septic tank last pumped? \_\_\_\_\_ Attach receipt if available.

6. Number of disposal trenches \_\_\_\_\_

7. Total length of disposal trenches (in feet) \_\_\_\_\_

8. Do you propose to use the existing septic system?      ☐ Yes      ☐ No

9. Is your septic system currently in use?      ☐ Yes      ☐ No      If no, date of last use \_\_\_\_\_

10. If the septic system currently serves a dwelling:

How many bedrooms are in the dwelling? \_\_\_\_\_ How many people occupy the dwelling? \_\_\_\_\_

11. How many bedrooms will be in the proposed dwelling? \_\_\_\_\_ How many occupants? \_\_\_\_\_

12. If the septic system serves a business:

How many total employees are there? \_\_\_\_\_

Type of business \_\_\_\_\_

13. Is there a proposed change of use of your structure (home or business)?      ☐ Yes      ☐ No

If yes, please explain \_\_\_\_\_

14. Provide a plot plan (sketch) on the reverse side of this form showing the best estimated or actual measurements that locate the existing septic tank and disposal trenches, property lines, easements, existing structures, driveways, and water supply. Indicate the direction of north. If you are proposing to replace the septic system, indicate the test hole location.

By my signature, I certify that the above information and the plot plan on the reverse side of this form are accurate and true to the best of my knowledge.

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
Signature of Property Owner or Legally Authorized Representative

County Use Only: Record of existing system:

☐ Yes      ☐ No      ☐ Attached

Date Issued \_\_\_\_\_

Permit Number \_\_\_\_\_

Other file information: \_\_\_\_\_



Modoc County Environmental Health  
202 West 4<sup>th</sup> Street • Alturas, CA 96101  
Phone (530) 233-6310 • Fax (530) 233-6342

### NOTICE AUTHORIZING REPRESENTATIVE

I, \_\_\_\_\_, have authorized  
(Property Owner/ Print Name)

\_\_\_\_\_ to act as my agent in performing  
(Authorized Representative /Print Name)

the activities necessary to obtain site evaluations, permits, and other onsite wastewater treatment program services provided by Modoc County Environmental Health on the property described below in accordance with Modoc County Ordinance Chapter 13.04. I agree that any costs not satisfied by the Authorized Representative are my responsibility.

### PROPERTY IDENTIFICATION:

Property Situs or Road Address

Township \_\_\_\_\_ Range \_\_\_\_\_ Section \_\_\_\_\_

Township \_\_\_\_\_ Range \_\_\_\_\_ Section \_\_\_\_\_

### PROPERTY OWNER:

Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_ Fax: \_\_\_\_\_

Email Address: \_\_\_\_\_

### AUTHORIZED REPRESENTATIVE:

Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Address: \_\_\_\_\_ Phone: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_ Fax: \_\_\_\_\_

Email Address: \_\_\_\_\_





# Test Pit Preparation for Onsite Sewage Evaluations

## When do you need a "Test Pit?"

When you apply for a permit to construct an onsite sewage disposal system, a County inspector will have to visit the proposed construction site. A test pit allows the inspector to test and examine the soil and soil layers and will help determine if it is appropriate to proceed with construction. This process is often referred to as a "site evaluation."

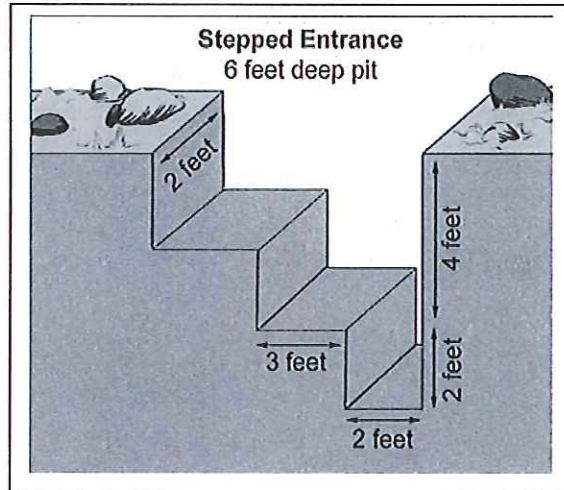
## Preparing the test pit

To provide for stabilization and safe access, standard test pits for site evaluations must be prepared in the following manner:

- The bottom of the pit shall be at least 2 feet wide and 4 feet long.
- The depth shall be at least 4.5 feet and not exceed 5 feet.
- In some instances, pits need only be excavated to the layer of hard rock or to the water table if that layer is less than 5 feet.

## 6-Foot test pits

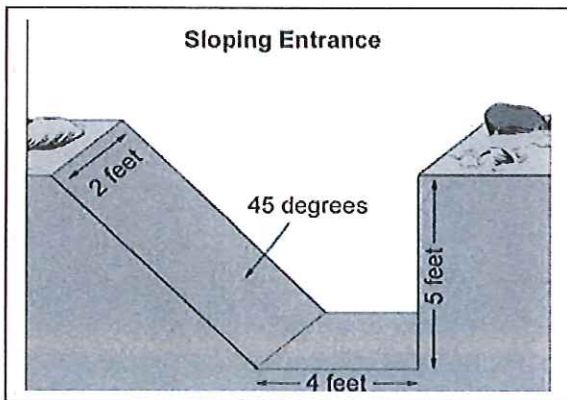
At the request of the inspector, test pits may need to be excavated to a depth of 6 feet as shown in the figure below:



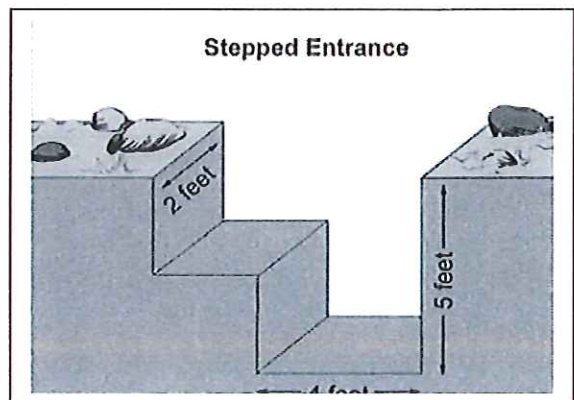
*The entrance to a 6-foot test pit may be sloped or stepped as soil conditions warrant.*

## Providing Access to the Standard Test Pits

For easy access, one end of the test pit shall be either:



*Sloped at approximately 45 degrees or less if the soils are dry or loose.*



*Stepped when soils are wet.*

All soils need to be a minimum of 2 feet from the pit edge.  
Request for deeper pits may be required for groundwater determination.

For more information:

Visit Modoc County Environmental Health's website at: <http://www.eh.co.modoc.ca.us.com>



## Modoc County Environmental Health Review

Does Owner meet current building code requirements for energy/water efficient fixtures?: ☐ Yes ☐ No

Does Owner utilize water saving appliances?: ☐ Yes ☐ No

Are there any appliances or devices (large tubs) that could reduce the life of the Onsite Waste Treatment System due to the use of a reduce flow calculation?: ☐ Yes ☐ No Explain, If Yes: \_\_\_\_\_

Does the site soil conditions favor a reduction?: ☐ Yes ☐ No Explain, If Yes: \_\_\_\_\_

### Project:

Design flow as per Table 2: \_\_\_\_\_

Leach area required: \_\_\_\_\_

Design flow with reduction: \_\_\_\_\_

Leach area required: \_\_\_\_\_

Leach Area Savings: \_\_\_\_\_





# Water Saving Leach Area Reduction Request

Modoc County Environmental Health

202 West 4th Street • Alturas, CA 96101

Name: \_\_\_\_\_ APN: \_\_\_\_\_

Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section: \_\_\_\_\_

Project: ☐ New Construction ☐ Major Repair

System Designed Use: \_\_\_\_\_ Year Building Constructed: \_\_\_\_\_

Dwelling: Number of Bedrooms \_\_\_\_\_ Number of Bathrooms \_\_\_\_\_

Bathroom #1: Toilet GAL/Flush \_\_\_\_\_ Shower Flow GPM \_\_\_\_\_ Sink Flow \_\_\_\_\_ Tub Size: ☐ < 50 Gal  
☐ 50-100 Gal  
☐ > 100 Gal

Bathroom #2: Toilet GAL/Flush \_\_\_\_\_ Shower Flow GPM \_\_\_\_\_ Sink Flow \_\_\_\_\_ Tub Size: ☐ < 50 Gal  
☐ 50-100 Gal  
☐ > 100 Gal

Bathroom #3: Toilet GAL/Flush \_\_\_\_\_ Shower Flow GPM \_\_\_\_\_ Sink Flow \_\_\_\_\_ Tub Size: ☐ < 50 Gal  
☐ 50-100 Gal  
☐ > 100 Gal

Kitchen Faucet GPM: \_\_\_\_\_ Dishwasher: ☐ Yes ☐ No Energy Star: ☐ Yes ☐ No GAL/Load: \_\_\_\_\_

Utility Sink GPM: \_\_\_\_\_ Clothes Washer: ☐ Yes ☐ No Energy Star: ☐ Yes ☐ No GAL/Load: \_\_\_\_\_

Other Indoor Water Fixtures: ☐ Yes ☐ No GPM: \_\_\_\_\_ GAL/Use: \_\_\_\_\_

I understand that this application for a water saving energy reduction relates to the proper function of my leach line and the continued use of water saving appliances and fixtures is a condition of use for this Onsite Waste Treatment System design reduction and is a condition of use on my permit.

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Reviewed By

\_\_\_\_\_  
Date

# MODOC COUNTY LAND USE COMPATIBILITY STATEMENT (LUCS)

Modoc County Environmental Health (MCEH)  
202 West 4<sup>th</sup> Street • Alturas, CA 96101

**WHAT IS A LUCS?** The Land Use Compatibility Statement is the process used by MCEH to determine whether MCEH permits and other approvals affecting land use are consistent with local government comprehensive plans. The LUCS form is included in the application approval packet.

**WHY IS A LUCS REQUIRED?** Modoc County requires activities that impact land use be consistent with local comprehensive plans and land use regulations.

**WHEN IS A LUCS REQUIRED?** A LUCS is required for nearly all MCEH permits, registrations under general permits, and certain other approvals and certifications that affect land use.

## HOW TO COMPLETE A LUCS:

Step	Who Does It	What Happens
1	Applicant	Completes Section 1 of the LUCS and submits it to the appropriate city or county planning office.
2	City or County Planning Office	Completes Section 2 of the LUCS by determining if the activity or use meets all local planning requirements, and returns to the applicant the signed and dated LUCS form <u>with findings of fact for any local reviews or necessary planning approvals.</u>
3	Applicant	Includes the completed LUCS with <u>findings of facts</u> with the submittal application to MCEH.

A permit cannot be issued if the proposed facility does not comply with all applicable local land use requirements. The applicant is responsible for working with the local planning office to comply with land use requirements.

**WHERE TO GET HELP:** Questions about the LUCS process can be directed to Modoc County Planning Department.  
203 West 4<sup>th</sup> Street • Alturas, CA 96101 • (530) 233-6406

## SECTION 1 – TO BE COMPLETED BY APPLICANT (may be filled in electronically by tabbing to each field)

1. Applicant Name/Property Owner: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_

### 2. Property Information:

County: \_\_\_\_\_ APN: \_\_\_\_\_

Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section: \_\_\_\_\_

Physical Address: \_\_\_\_\_

Block: \_\_\_\_\_ Lot: \_\_\_\_\_

Subdivision Name (if applicable): \_\_\_\_\_



3. The Proposed use is for: \_\_\_\_\_

Describe: \_\_\_\_\_

4. Permit or Approval being requested:

- ☐ Construction-Installation permit for: ☐ New Construction ☐ Repair ☐ Alteration  
☐ Non-water-carried facility requests (for example, pit privy/vault toilet for campgrounds).  
☐ Authorization Notice for: ☐ Replacement of dwelling ☐ Bedroom Addition  
☐ Other changes in land use involving potential sewage flow increases  
☐ Food Program: ☐ Permanent Food Facility ☐ Temporary Food Facility  
☐ Mobile Food Facility ☐ Cottage Food  
☐ Tattoo Facility ☐ Organized Camp ☐ Public Pool/Spa ☐ Medical Waste Permit  
CUPA: ☐ Aboveground Storage Tanks ☐ Underground Storage Tanks  
☐ Hazardous Waste Generator ☐ Hazardous Materials Business Plan  
☐ Hazardous Materials Business Plan Onsite Treatment  
☐ Well: ☐ Public ☐ Domestic ☐ Other Use: Describe \_\_\_\_\_  
☐ Solid Waste Facility

SECTION 2 – TO BE COMPLETED BY CITY OR COUNTY PLANNING OFFICIAL

5. Property Zoning: \_\_\_\_\_ Zoning Minimum Parcel Size: \_\_\_\_\_

6. The facility is located: ☐ Inside city limits of Alturas ☐ Unincorporated area of the County  
The Proposed facility is subject to: ☐ City Jurisdiction ☐ County Jurisdiction  
☐ Shared City/County jurisdiction

7. Does the proposed facility comply with all applicable local land use requirements: ☐ Yes ☐ No

If you answered "Yes" above, was this compliance based on:

- ☐ Outright compliance with local comprehensive plans and land use requirements (provide a citation to the applicable provisions).  
☐ Conditional approval (provide findings and citation or attach a copy of the applicable land use decision)

Either provide reasons for affirmative compliance decision or attach findings of fact: \_\_\_\_\_

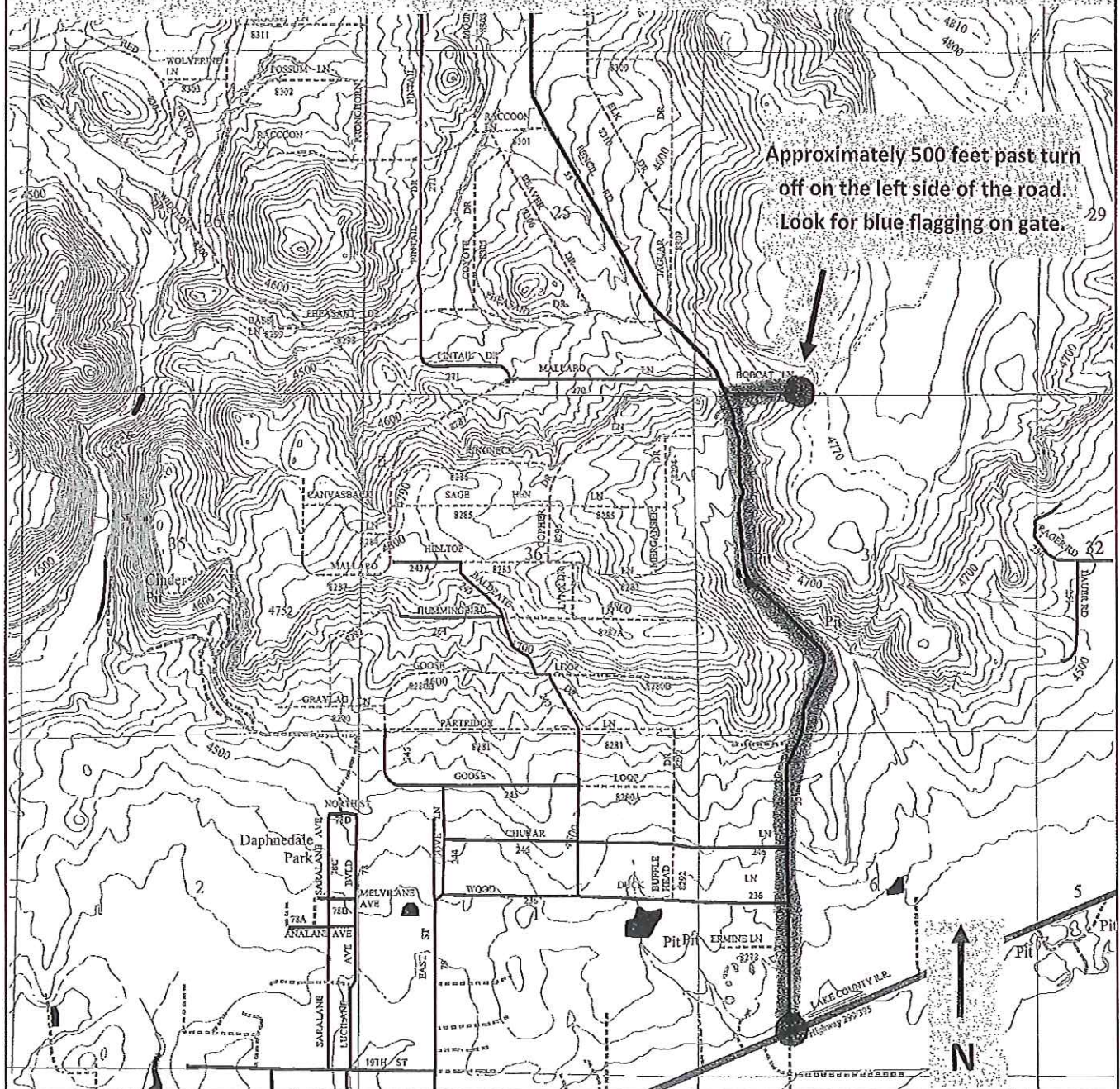
8. Planning Official Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_ Title: \_\_\_\_\_

Telephone: \_\_\_\_\_ Date: \_\_\_\_\_



# EXAMPLE MAP



TO ALTURAS

TO LAKEVIEW



# MODOC OWTS PROGRAM

## WHO CAN DO WHAT

- SITE EVALUATION
  - Ca. Registered Environmental Health Specialist
  - Ca. Registered Geologist
  - Certified Soil Scientist- Needs to be approved by County authority.
  - Ca. Registered Civil Engineer
- OWTS INSTALLATION
  - Ca. Contractor License A, C36, and C42.
  - Owner
- MAINTENANCE CONTRACT FOR NON-STANDARD SYSTEMS
  - ADVANCED TREATMENT
    - Manufacture Certification
  - SANDFILTER/PRESSURE DISTRIBUTION
    - NAWT Certification
    - REHS
    - Ca. Licensed Contractor C36 or C42
  - ALTERNATIVE TECHNOLOGIES AND GRAY WATER
    - Depends on System
  - HOLDING TANK
    - Registered Pumper Truck Required for contract
      - Ca. Licensed Contractor C36 or C32
      - NAWT Certification
      - REHS
- EXISTING SYSTEM EVALUATION
  - Ca. Licensed Contractor C36 or C32
  - NAWT Certification
  - REHS
  - Manufacture Certified Inspector
- OWTS DESIGN
  - Ca. Registered Environmental Health Specialist
  - Ca. Registered Geologist
  - Certified Soil Scientist- Needs to be approved by Environmental Health.
  - Ca. Registered Civil Engineer
  - Ca. Contractor License A, C36, and C42.
  - Owner
- OWTS INSPECTION
  - Ca. Registered Environmental Health Specialist

LOCAL ONSITE WASTEWATER PROJECT  
PROCESS STEPS

NEW SYSTEM

REPAIR

ALTERATION

AUTHORIZATION

PERMIT RENEWAL/TRANSFER

SUBMIT APPLICATION AND  
FEE FOR SITE EVALUATION  
AND SCHEDULE SITE VISIT.  
(COMMERCIAL OR  
DOMESTIC)

COUNTY DETERMINES IF SITE IS:  
>SUITABLE FOR OWTS  
>TYPE OF SYSTEM REQUIRED  
EVALUATION SCANNED & FILED.

NOT  
SUITABLE

DISCUSS POSSIBLE  
OPTIONS WITH  
APPLICANT.

IF NEW SITE IS CHOSEN,  
START APPLICATION  
PROCESS OVER.

YES

TYPE OF SYSTEM REQUIRED AS PER  
APPLIED USE AND SITE  
CONDITIONS DETERMINED FROM  
EVALUATION:

STANDARD

TYPE OF SYSTEM REQUIRED AS PER  
APPLIED USE AND SITE  
CONDITIONS DETERMINED FROM  
EVALUATION:

ADVANCED TREATMENT

TYPE OF SYSTEM REQUIRED AS PER  
APPLIED USE AND SITE  
CONDITIONS DETERMINED FROM  
EVALUATION:

ALTERNATIVE TECHNOLOGIES AND  
GRAYWATER

TYPE OF SYSTEM REQUIRED AS PER  
APPLIED USE AND SITE  
CONDITIONS DETERMINED FROM  
EVALUATION:

HOLDING TANK

SUBMIT NEW  
CONSTRUCTION  
APPLICATION, SYSTEM  
DESIGN PLAN, FEE, AND  
SCHEDULE SITE VISIT  
(COMMERCIAL OR  
DOMESTIC).

SUBMIT NEW  
CONSTRUCTION  
APPLICATION, SYSTEM  
DESIGN PLAN,  
MAINTENANCE  
CONTRACT, FEE, AND  
SCHEDULE SITE VISIT  
(COMMERCIAL OR  
DOMESTIC).

SUBMIT NEW  
CONSTRUCTION  
APPLICATION, SYSTEM  
DESIGN PLAN, FEE, AND  
SCHEDULE SITE VISIT  
(DOMESTIC WASTE  
ONLY).

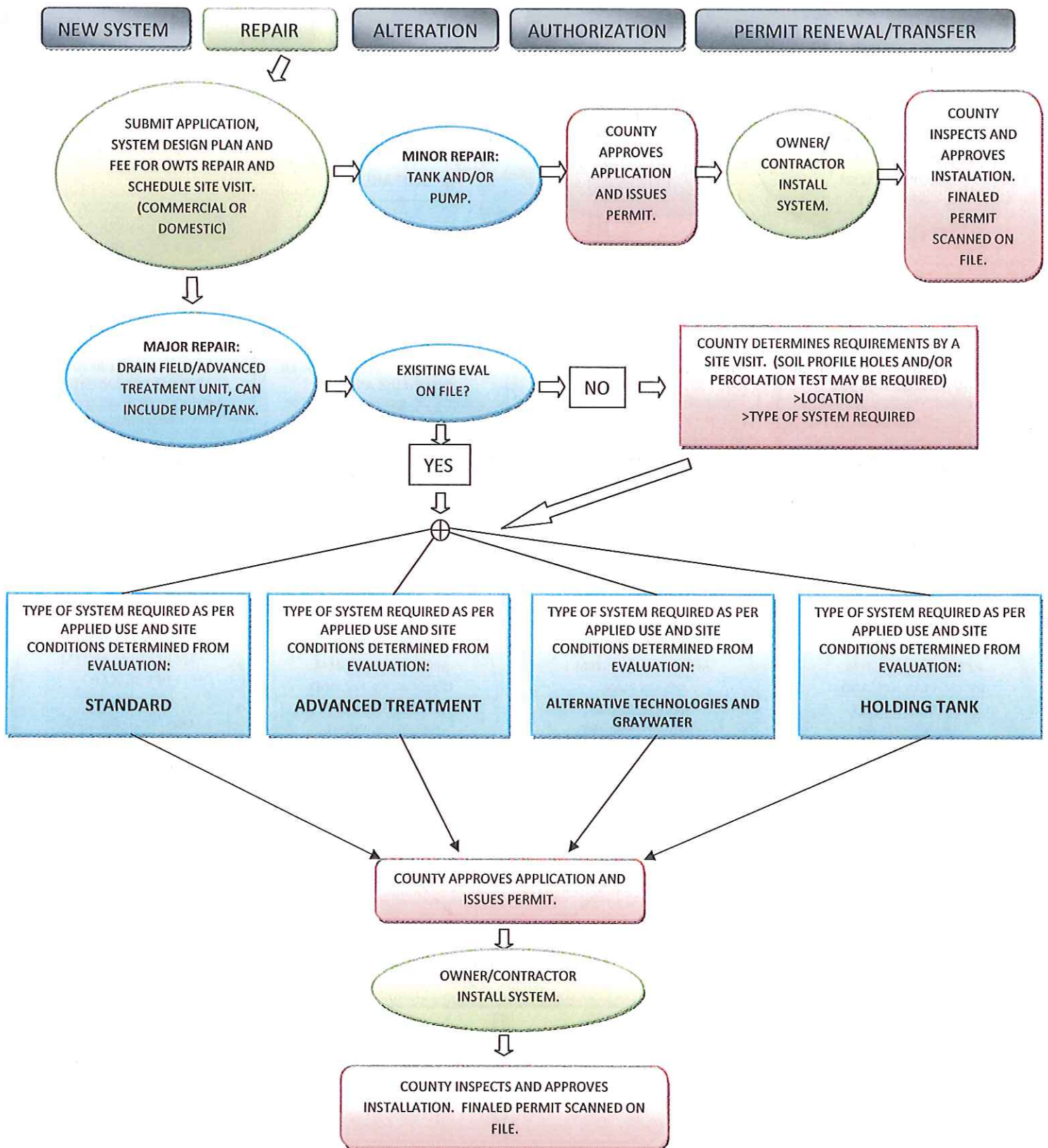
SUBMIT NEW  
CONSTRUCTION  
APPLICATION, SYSTEM  
DESIGN PLAN,  
MAINTENANCE  
CONTRACT, FEE, AND  
SCHEDULE SITE VISIT  
(DOMESTIC WASTE  
ONLY).

COUNTY APPROVES APPLICATION AND  
ISSUES PERMIT.

COUNTY INSPECTS AND APPROVES  
INSTALLATION. FINALED PERMIT SCANNED ON  
FILE.



LOCAL ONSITE WASTEWATER PROJECT  
PROCESS STEPS



LOCAL ONSITE WASTEWATER PROJECT  
PROCESS STEPS

NEW SYSTEM

REPAIR

ALTERATION

AUTHORIZATION

PERMIT RENEWAL/TRANSFER

SUBMIT APPLICATION, SYSTEM DESIGN PLAN AND  
FEE FOR OWTS ALTERATION. SCHEDULE SITE  
VISIT. (COMMERCIAL OR DOMESTIC)

EXISTING EVAL  
ON FILE?

YES

NO

COUNTY DETERMINES REQUIREMENTS BY  
A SITE VISIT AND USE OF EXISTING EVAL IF  
INFORMATION IS PERTINENT.  
>LOCATION  
>TYPE OF SYSTEM REQUIRED

COUNTY DETERMINES REQUIREMENTS BY A  
SITE VISIT. (SOIL PROFILE HOLES AND/OR  
PERCOLATION TEST WILL BE REQUIRED)  
>LOCATION  
>TYPE OF SYSTEM REQUIRED

TYPE OF SYSTEM REQUIRED AS PER  
APPLIED USE AND SITE  
CONDITIONS DETERMINED FROM  
EVALUATION:

STANDARD

TYPE OF SYSTEM REQUIRED AS PER  
APPLIED USE AND SITE  
CONDITIONS DETERMINED FROM  
EVALUATION:

ADVANCED TREATMENT

TYPE OF SYSTEM REQUIRED AS PER  
APPLIED USE AND SITE  
CONDITIONS DETERMINED FROM  
EVALUATION:

ALTERNATIVE TECHNOLOGIES AND  
GRAYWATER

TYPE OF SYSTEM REQUIRED AS PER  
APPLIED USE AND SITE  
CONDITIONS DETERMINED FROM  
EVALUATION:

HOLDING TANK

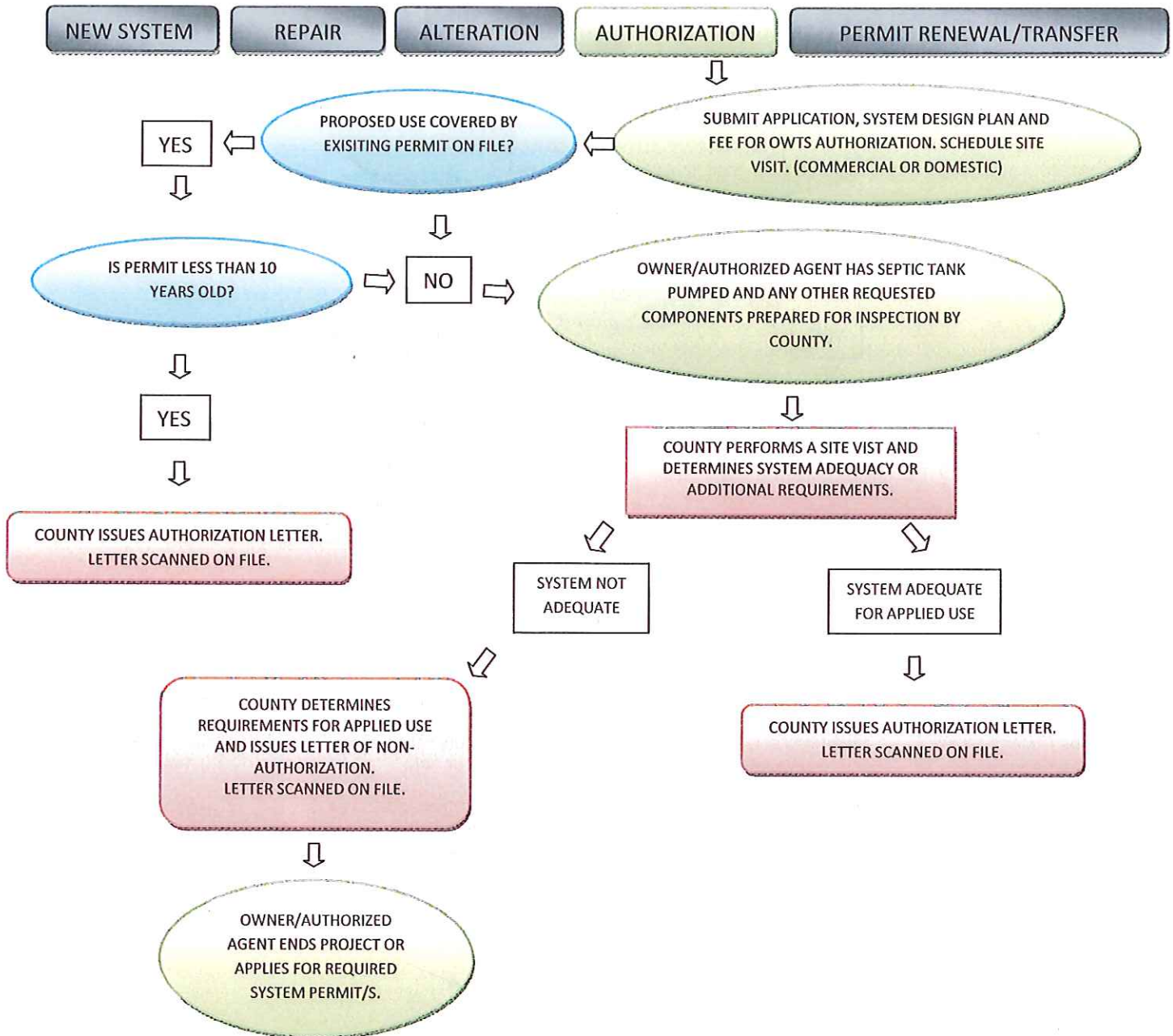
COUNTY APPROVES APPLICATION,  
PLANS, AND ISSUES PERMIT.

OWNER/CONTRACTOR  
INSTALL SYSTEM.

COUNTY INSPECTS AND APPROVES  
INSTALLATION. FINALED PERMIT SCANNED ON  
FILE.



LOCAL ONSITE WASTEWATER PROJECT  
PROCESS STEPS



LOCAL ONSITE WASTEWATER PROJECT  
PROCESS STEPS

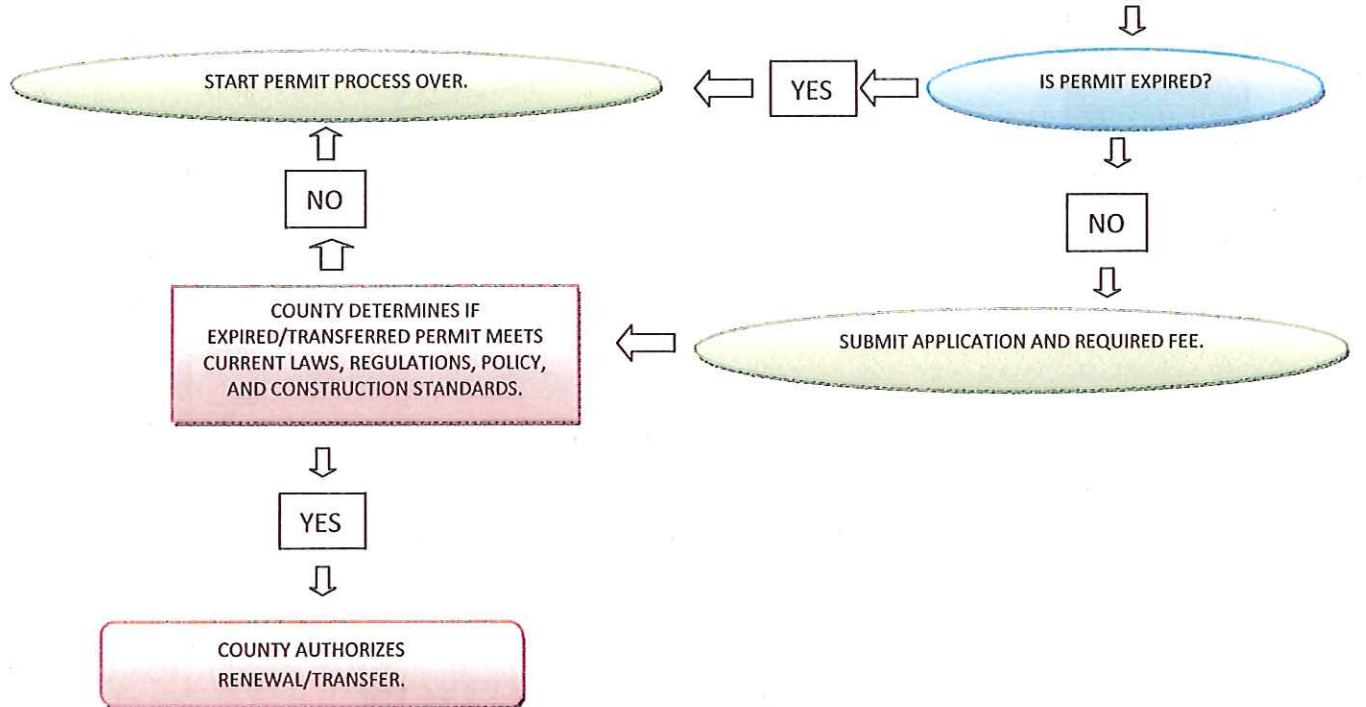
NEW SYSTEM

REPAIR

ALTERATION

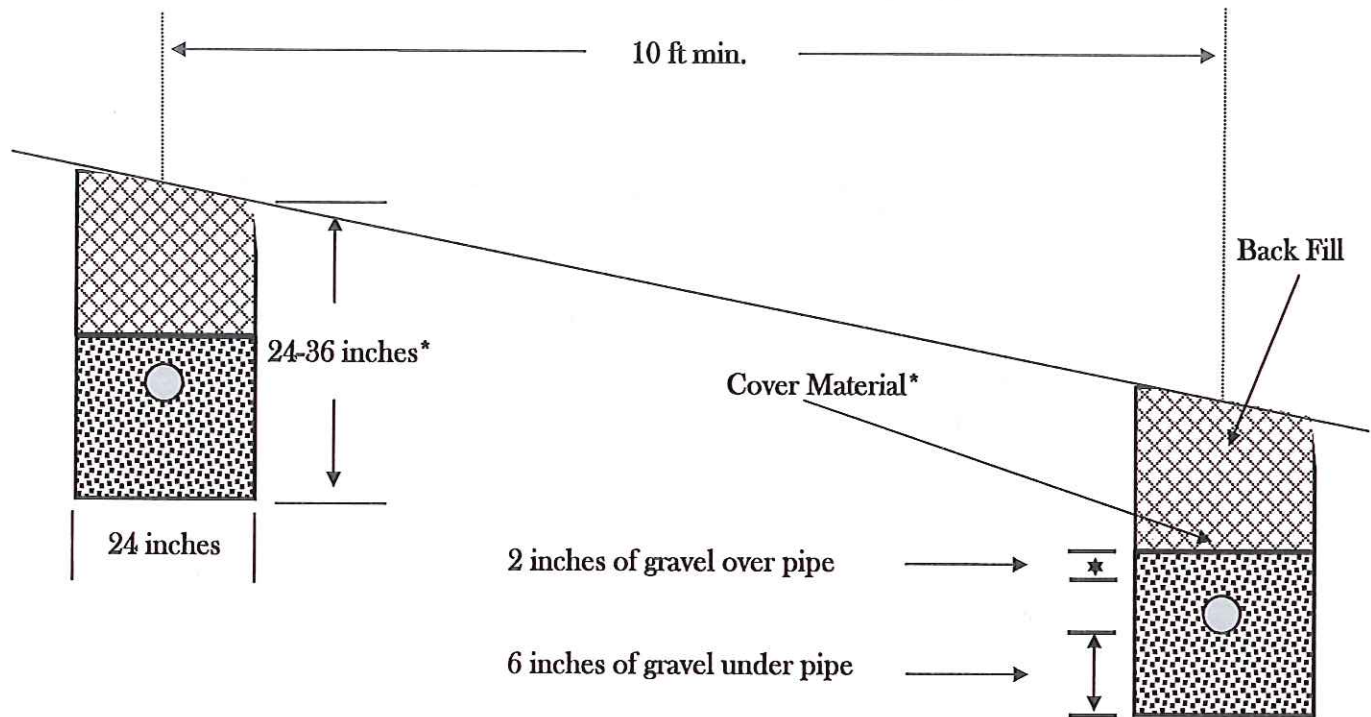
AUTHORIZATION

PERMIT RENEWAL/TRANSFER



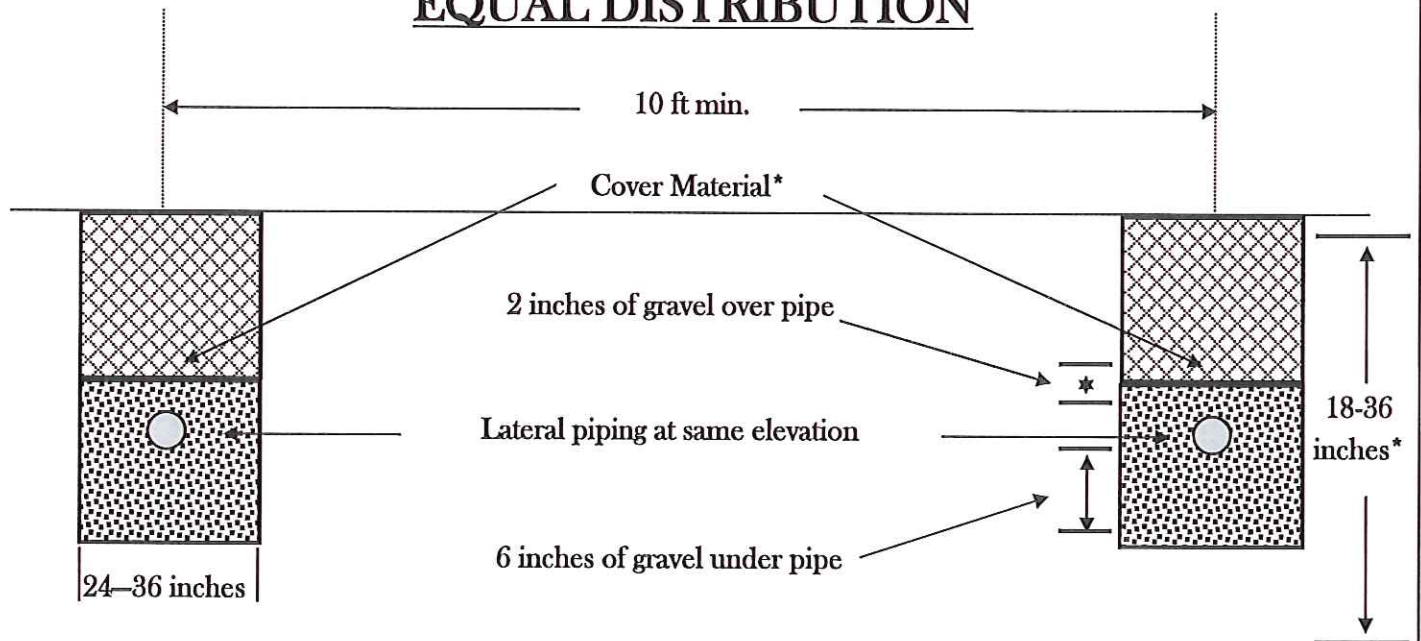


## SERIAL DISTRIBUTION



\* See permit conditions for trench depth and cover material specifications

## EQUAL DISTRIBUTION



\*See permit conditions for trench depth and cover material specifications

# Example



**Application for License**  
**Sewage Disposal**  
**Business Registration**  
Modoc County  
Environmental Health  
202 West 4th Street • Alturas, CA 96101

Official Use Only

Date Paid: \_\_\_\_\_  
Amt: \_\_\_\_\_  
CK#: \_\_\_\_\_  
Date Issued: \_\_\_\_\_  
Registration #: \_\_\_\_\_

I hereby apply for a Sewage Disposal Service Registration. The license period is based on the State's fiscal year, July 1 through June 30.

**Please Note!** Your license may be valid for a shorter period of time if you register after January 1st. Registrations issued three years up to December 31st of the third year unless suspended or revoked.

- ☐ New Registration      ☐ Reinstatement of Suspended or Revoked      ☐ Transfer of Business Owner  
☐ Amendment of Current Registration

Please Include the Following:

- 1.) Septage Management Plan Work Sheet
- 2.) Pumping equipment inspection form for each piece of equipment used to haul, pump or store septage.

Exact business name (this name must match your application and bond)

Contractor No.

Owner Name

Phone No.

Mailing Address

Physical Address (if different)

City, State, Zip

City, State, Zip

Your Name

Title (list additional member/officers on back of form)

Address

City, State, Zip

Email Address (print legibly)

By my signature below, I certify that all the information provided with this application is true and accurate to the best of my knowledge. I understand that this registration is valid for three years, however I am required to submit a septage management plan annually.

\_\_\_\_\_  
Signature of Owner or Member (No Stamps)

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

Please be sure you have completed this application and enclosed all required attachments before submitting it to Modoc County Environmental Health at the address found in the upper center of this form. The non-refundable/non-poratable application fee must accompany this application.



## Capping Fill Drainfield

Capping Fill systems (cap/fill) are standard systems with the trenches installed shallower than a standard trench would be allowed. Soil must be brought in to be mixed and then added over the drainfield to allow for adequate cover. These shallow drainfields are used to maintain setbacks between the bottom of the drainfield trench and either:

- An impermeable layer,
- A rapidly draining layer (sand or gravel) or
- A water table.

The Capping fill concept sounds easy but they can be tricky to install. The trench depths (maximum and minimum) allow for little variation in elevation difference: the trenches have to follow the exact contour of the slope. Scarifying, and then adding the cap without compacting the soil can be difficult also.

The cap/fill drainfield uses a septic tank to settle out the solids and pass only liquid black water to the absorption drainfield. The liquid passes out of the septic tank and is delivered to the drainfield through the effluent sewer. This pipe must have a minimum of 8 inches of fall between the tank and the distribution box. From the distribution box, the black water flows into the perforated pipe of the cap/fill drainfield. Elevations are very critical when designing your capping fill installation. The top of the tank outlet must be a minimum of 18 inches above the maximum trench depth as designated on your permit or site evaluation report.

The area of the drainfield installation is first scarified to remove all vegetation. The drainfield trenches are dug very shallow (12-22 inches depending on permit) in the native soil. The gravel and perforated pipe (perf. pipe) are installed and covered with filter fabric. After the pre-cover inspection, the drainfield is covered with capping material. The capping material is either taken from somewhere else on the lot, or brought in after being inspected. The cap must be installed over the entire drainfield area to a depth of 14 to 16 inches over the gravel layer, and feathered out 10 feet beyond the drainfield trenches.

### Rules for Construction and Inspection

**DO NOT** install a capping fill (cap/fill) drainfield when the approved area is wet or frozen!!! Construction of cap/fill drainfields shall occur between June 1st and October 1st unless authorized by the agent/sanitarian. The upper 18 inches of the natural soil must not be moist enough to cause loss of soil structure and/or porosity when worked. (Soil is too moist when a handful is squeezed several times and the sample looks wet or shiny on the surface. Call sanitarian for verification.)

The drainfield area (including the 10 foot cap perimeter) and the borrow site (if applicable) shall be scarified. This is the removal of all the vegetation and one to two inches of the soil in the drainfield area. This will eliminate any waxy layer (pine needles, sage wood ...) and assure a good contact layer between the native soil and the cap material. The top six (6) inches of the native soil shall be tilled or worked so as to easily mix with the cap material. Remove as little soil as possible but achieve thorough removal of all vegetation.

# SEPTAGE MANAGEMENT PLAN WORKSHEET

## GENERAL INFORMATION

1. \_\_\_\_\_ Exact Business or Corporate Name      2. \_\_\_\_\_ Contractor's License #      3. \_\_\_\_\_ Business Phone Number
4. \_\_\_\_\_ Business Mailing Address
5. \_\_\_\_\_ Business Physical Address
6. Authorized Business Representative: \_\_\_\_\_  
First Name      Middle Initial      Last Name      Title

7. Sources and Approximate Volume (Gal/Yr) Pumped Annually:

- A. Septic Tanks: \_\_\_\_\_ Gal/Yr      B. Holding Tanks: \_\_\_\_\_ Gal/Yr      C. Chemical Toilets: \_\_\_\_\_ Gal/Yr
- D. Vault Toilets: \_\_\_\_\_ Gal/Yr      E. Other Sources (Specify): \_\_\_\_\_ Gal/Yr

8. Septage Disposal:

A. SEWAGE TREATMENT PLANT WHERE MOST SEPTAGE DISPOSAL OCCURS:

- Sewage Treatment Plant: \_\_\_\_\_  
Treatment Plant Name      Location      Telephone
- a. Septage Sources and Volumes (Gal/Yr) Accepted by Treatment Plant:
  - i. Septic Tanks: \_\_\_\_\_ Gal/Yr      ii. Holding Tanks: \_\_\_\_\_ Gal/Yr      iii. Chemical Toilets: \_\_\_\_\_ Gal/Yr
  - iv. Vault Toilets: \_\_\_\_\_ Gal/Yr      v. Other Sources (Specify): \_\_\_\_\_ Gal/Yr
- b. Location at Plant where Septage Received: \_\_\_\_\_
- c. *Provide a copy of a letter from the treatment plant operator which authorizes your business to dispose septage at the treatment plant. The letter must indicate the type of septage the plant has agreed to receive from your business.*

B. OTHER SEWAGE TREATMENT PLANTS WHERE SEPTAGE DISPOSAL OCCURS:

- Sewage Treatment Plant: \_\_\_\_\_  
Treatment Plant Name      Location      Telephone
- a. Septage Sources and Volumes (Gal/Yr) Accepted by Treatment Plant:
  - i. Septic Tanks: \_\_\_\_\_ Gal/Yr      ii. Holding Tanks: \_\_\_\_\_ Gal/Yr      iii. Chemical Toilets: \_\_\_\_\_ Gal/Yr
  - iv. Vault Toilets: \_\_\_\_\_ Gal/Yr      v. Other Sources (Specify): \_\_\_\_\_ Gal/Yr
- b. Location at Plant where Septage Received: \_\_\_\_\_
- c. *Provide a copy of a letter from the treatment plant operator which authorizes your business to dispose septage at the treatment plant. The letter must indicate the type of septage the plant has agreed to receive from your business.*

C. PERMITTED SOLID WASTE DISPOSAL FACILITY:

- a. Disposal Facility Name: \_\_\_\_\_
- c. Facility Type and Location: \_\_\_\_\_
- d. Septage Sources and Volumes (Gal/Yr) Accepted by Disposal Facility:
  - i. Septic Tanks: \_\_\_\_\_ Gal/Yr      ii. Holding Tanks: \_\_\_\_\_ Gal/Yr      iii. Chemical Toilets: \_\_\_\_\_ Gal/Yr
  - iv. Vault Toilets: \_\_\_\_\_ Gal/Yr      v. Other Sources (Specify): \_\_\_\_\_ Gal/Yr
- e. Location at Disposal Facility where Septage Received: \_\_\_\_\_
- f. *Provide a copy of a letter from the treatment plant operator which authorizes your business to dispose septage at the facility plant. The letter must indicate the type of septage the plant has agreed to receive from your business.*



9. Pumper Vehicle Description(s):

- A. How many septage pumping vehicles (includes pumper trucks and tank trailers) does your business operate? \_\_\_\_\_
- B. *Provide a copy of the most recent to Department of Environmental Health "Sewage Pumping Equipment Description/ Vehicle Inspection" form completed for each pumper truck you operate. Be sure the form has been signed by a representative from the Department of Environmental Health.*

10. Provide a description of any interim storage/transfer facilities used for holding septage pending disposal or application elsewhere:

- A. Type Storage Facility: \_\_\_\_\_ B. Volume Facility: ` \_\_\_\_\_

C. Sources(s) Septage Stored:

- a. Septic Tanks: ☐ Yes ☐ No    b. Holding Tanks: ☐ Yes ☐ No    c. Chemical Toilets: ☐ Yes ☐ No
- d. Vault Toilets: ☐ Yes ☐ No    e. Other: ☐ Yes ☐ No \_\_\_\_\_

Specify



**Existing System Evaluation Report for Onsite Wastewater Systems**  
**Modoc County Environmental Health**  
**202 West 4th Street, Alturas, CA 96101**

Please answer the following questions as completely as possible. If you are unable to fill out any part of this form indicate in writing why these sections were left blank.

**Septic System Owner - Provider Information:**

Property Owner(s)(Sellers): \_\_\_\_\_ Telephone: \_\_\_\_\_

Site Address: \_\_\_\_\_ City: \_\_\_\_\_ Zip Code: \_\_\_\_\_

County: \_\_\_\_\_ Lot Size: \_\_\_\_\_ Acres/Square Feet (circle units)

Legal Description: \_\_\_\_\_

Age of wastewater treatment system \_\_\_\_\_ (years) Is there a service contract for system components? \_\_\_\_\_

Date the septic tank was last pumped \_\_\_\_\_ (please attach receipt if available)

Number of people occupying dwelling \_\_\_\_\_ If un occupied, for how long has it been vacant?

The above information is true and to the best of my knowledge.

Date (MM/DD/YYYY)

Signature of Owner, or agent if present

Name of person performing evaluation (please print): \_\_\_\_\_

**Certification:**

- |  |  |
|--|--|
| <input type="checkbox"/> Installer   | <input type="checkbox"/> Professional Engineer           |
| <input type="checkbox"/> Maintenance Provider                              | <input type="checkbox"/> Environmental Health Specialist |
| <input type="checkbox"/> National Association of Wastewater Technicians    | <input type="checkbox"/> Wastewater Specialist           |
| <input type="checkbox"/> Other: MCEH approved in writing (please describe) |  |

Certification Number: \_\_\_\_\_

Business Name \_\_\_\_\_ Email \_\_\_\_\_

Business address \_\_\_\_\_ Phone \_\_\_\_\_

Date of Evaluation: \_\_\_\_\_ (MM/DD/YYYY)

I hereby certify, by my signature, that I meet all of the qualifications required to perform onsite wastewater system evaluations in the state of California.

Date (MM/DD/YYYY)

Signature of Qualified Septic System Evaluator



1. **General System Information**

The Existing System Evaluation Report form contains 8 pages. Some of the questions on this form may not pertain to the system being evaluated, as there are many system designs. If you (the septic system evaluator) are unable to answer any of the questions on this form please indicate, in writing, why this information was not available at the time the evaluation was completed

- The existing septic system consists of (check all that apply):

- |  |                                       |
|--|---------------------------------------|
| <input type="checkbox"/> Septic Tank                   | <input type="checkbox"/> Cesspool     |
| <input type="checkbox"/> Disposal Trenches/Leach Lines | <input type="checkbox"/> Capping Fill |
| <input type="checkbox"/> Seepage Bed                   | <input type="checkbox"/> Sand Filter  |
| <input type="checkbox"/> Other (please describe) _____ |                                       |

Note: If the system is a seepage pit or cesspool contact your local County office for further guidance.

- There is a permit for the septic system: ☐ Yes ☐ No ☐ Unknown
- Permit Number: \_\_\_\_\_
- Date septic system installed: \_\_\_\_\_ (YYYY) No record of installation date
- All plumbing fixtures are connected to the septic system ☐ Yes ☐ No ☐ Unknown

If you answered "No" or "Unknown," please describe below:

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- Additional Comments:

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2. **Overall Septic System Status**

- Discharge of sewage to the ground surface: ☐ Yes ☐ No ☐ None Observed
- Discharge of sewage to surface waters: ☐ Yes ☐ No ☐ None Observed
- Sewage backup into plumbing fixtures: ☐ Yes ☐ No ☐ Unknown
- Additional Comments:

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### 3. Septic Tank

In order to fully describe the conditions of the tank, the septic tank may need to be pumped. Please indicate below if the septic system tank was pumped during the course of *this* evaluation.

- Septic tank was pumped during the course of *this* evaluation: ☐ Yes ☐ No
- If the septic tank was **NOT pumped** during the course of *this* evaluation, please explain below, e.g. septic system owner declined to have the tank pumped etc:

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- The septic tank material is:

☐ Concrete

☐ Steel

☐ Plastic

☐ Fiberglass

☐ Other (explain) \_\_\_\_\_

☐ Unknown

- Is the septic tank accessible? ☐ Yes ☐ No
- Septic tank volume (in gallons): \_\_\_\_\_
- Septic tank risers are at ground level: ☐ Yes ☐ No
- Tank appears to be watertight and in good condition: ☐ Yes ☐ No

If you answered "No," please describe the condition of the septic tank below. For example, evidence of gas corrosion, cracks, leaks, etc.

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- Septic tank lid(s) is intact: ☐ Yes ☐ No
- Septic tank baffles are intact: ☐ Yes ☐ No
- Effluent filter is present: ☐ Yes ☐ No
- Effluent filter is free of debris: ☐ Yes ☐ No
- Liquid level in tank relative to invert of outlet: ☐ At ☐ Above ☐ Below
- Scum layer \_\_\_\_\_(inches)      Sludge layer \_\_\_\_\_(inches)
- Scum and Sludge layer more than 35% of the *total* tank volume: ☐ Yes ☐ No
- Additional Comments:

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4. **Dosing Tank / Pump Basin**

Dosing tanks, where present, have a pump that send effluent to the soil absorption field (leach field). Not all septic system designs have a dosing tank.

- The septic system has a dosing tank: ☐ Yes ☐ No

(If "No," skip the rest of section 4)

- Dosing tank capacity \_\_\_\_\_(gallons)
- Dosing tank material \_\_\_\_\_
- Dosing tank appears to be watertight and in good condition: ☐ Yes ☐ No
- Dosing tank lid is intact: ☐ Yes ☐ No
- Electrical components are sealed and watertight: ☐ Yes ☐ No
- Pump/Siphon is functional: ☐ Yes ☐ No
- Type of Pump: ☐ Demand ☐ Dose ☐ Time Dose
- Pump control mechanism is functional (floats, pressure transducer) ☐ Yes ☐ No
- There is a high water alarm: ☐ Yes ☐ No
- The high water alarm (audible and visual) is working: ☐ Yes ☐ No ☐ Not Applicable
- Type of Screen: \_\_\_\_\_
- Screen is clean and free of debris: Yes No - Screen cleaned for this evaluation: ☐ Yes ☐ No
- Scum/Sludge present in Dosing Tank: ☐ Yes ☐ No
- Scum layer \_\_\_\_\_(inches)      Sludge layer \_\_\_\_\_(inches)
- Additional Comments:

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5. **Soil absorption system**

The soil absorption system is a set of trenches that receives effluent from the septic tank and treats the effluent.

- The septic system has a soil absorption system: ☐ Yes ☐ No
- Was the soil absorption system part of the evaluation? ☐ Yes ☐ No

If the soil absorption system was not evaluated, please explain below (for example unable to locate, client did not authorize this part of the evaluation):

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- Absorption Distribution: ☐ Equal ☐ Serial ☐ Pressure ☐ Equal via Pressure
- Absorption lines construction material:  
☐ Gravel and Pipe ☐ Chamber ☐ Tile ☐ Polystyrene Foam and Pipe ☐ Other
- Absorption Distribution unit(s) drop box, hydrosplitter, equal distribution box): ☐ Intact ☐ Damaged ☐ N/A

- Absorption Distribution unit(s) are free of debris or solids: ☐ Yes ☐ No
- Locate all drain lines in soil absorption system: ☐ Yes ☐ No
- Lengths determined by: ☐ Physically uncovering portions of system/probing ☐ Written records
- Absorption area appears to be free from roads, vehicular traffic, structures, livestock, deep-rooted plants, etc.  
☐ Yes ☐ No

If you answered "No," please describe below:

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- Absorption area appears to be free from surface water runoff and down spouts: ☐ Yes ☐ No
- Evidence of ponding in absorption area or distribution unit(s): ☐ Yes ☐ No
- The absorption replacement area assigned in the "as-built" drawing appears to be intact: ☐ Yes ☐ No

If you answered "No," please explain below:

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- Additional Comments:

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- **Sand Filter System**

There are different sand filter system designs used in California. Not every sand filter system will contain all of the components mentioned below, e.g. pumps. The owner of a sand filter system **installed on or after 2016 must** maintain an annual service contract with a certified Maintenance Provider. Maintenance records should be available from the system owner, or the **maintenance records to this evaluation form**.

- The septic system has a sand filter: ☐ Yes ☐ No

(If "No," skip the rest of section 6)

- Type of sand filter:

- ☐ Intermittent
- ☐ Re-circulating
- ☐ Bottomless

- Sand filter container appears to be watertight and in good condition: ☐ Yes ☐ No



- Sand filter appears to be free from roads, vehicular traffic, structures, livestock, deep-rooted plants, etc.  
☐ Yes ☐ No

If you answered "No," please describe below:

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- Sand filter appears to be free from surface water runoff and down spouts: ☐ Yes ☐ No
- Evidence of ponding in/on sand filter media surface: ☐ Yes ☐ No
- Lateral lines flushed and equal distribution verified: ☐ Yes ☐ No
- Monitoring ports are present: ☐ Yes ☐ No
- Surface access to manifold and valves: ☐ Yes ☐ No
- The sand filter has a pump: ☐ Yes ☐ No

(If "No," skip the rest of section 6)

- Pump vault appears to be watertight and in good condition: ☐ Yes ☐ No ☐ N/A
- Pump is functional: ☐ Yes ☐ No
- Pump control mechanism is functional (floats, pressure transducer): ☐ Yes ☐ No
- High water alarm in pump vault (audible and visual) is working: ☐ Yes ☐ No
- Pump electrical components are sealed and watertight: ☐ Yes ☐ No
- Additional Comments:

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- **Alternative Treatment Technology System**

The owner of an ATT system *must* maintain an annual service contract with a certified Maintenance Provider. Maintenance records should be available from the system owner, or the contracted Maintenance Provider. **Please attach copies of the previous two years of maintenance records to this evaluation form.**

- The septic system has an **Alternative Treatment Technology (ATT)**: ☐ Yes ☐ No

(If "No," skip the rest of section 7)

- Please provide the product name, system id number, and manufacturer name below:

Product Name: \_\_\_\_\_

System ID Number: \_\_\_\_\_

Manufacturer Name: \_\_\_\_\_

- Previous two years of maintenance records are available: Yes No

If you answered "No," please explain below:

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- Previous two years of maintenance records are attached to this form: Yes No

If you answered "No," please explain below:

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- Additional Comments:

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8. **Please attach a copy** of the following items to this form. Contact MCEH to locate these items.

- Please attach a **copy** of the original septic system permit to this form, if available.
- Please attach a **copy** of the original as-built drawing to this form, if available.
- Please attach a **copy** of the Certificate of Satisfactory Completion to this form, if available
- Additional Comments:

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9. **Provide a Site Plan**

- Please provide a sketch of the complete system (show only system components that were evaluated) on page 8 of this form, if a copy of the original "as-built" drawing is *not* available.
- Please provide a sketch of the complete system on page 8 of this form if the original "as-built" drawing is *not* accurate or representative of the existing system.
- If the original "as-built" drawing is available for copy, and the original appears to be accurate and representative of the existing system, write "same as as-built" on page 8 of this form, and do not redraw the system.
- Additional Comments:

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10. **Water test for non-public water source:**

Please provide results of a standard bacterial water potability test.

11. **Disclaimer:**

This evaluation report describes the septic system as it exists on the date of evaluation and to the extent that components and operation of the system are reasonably observable. MCEH recognizes that this evaluation report does not provide assurance or any warranty that the system will operate properly in the future.

12. I hereby certify, by my signature, that the above information and the plot plan on the next page of this form are accurate and true to the best of my knowledge.

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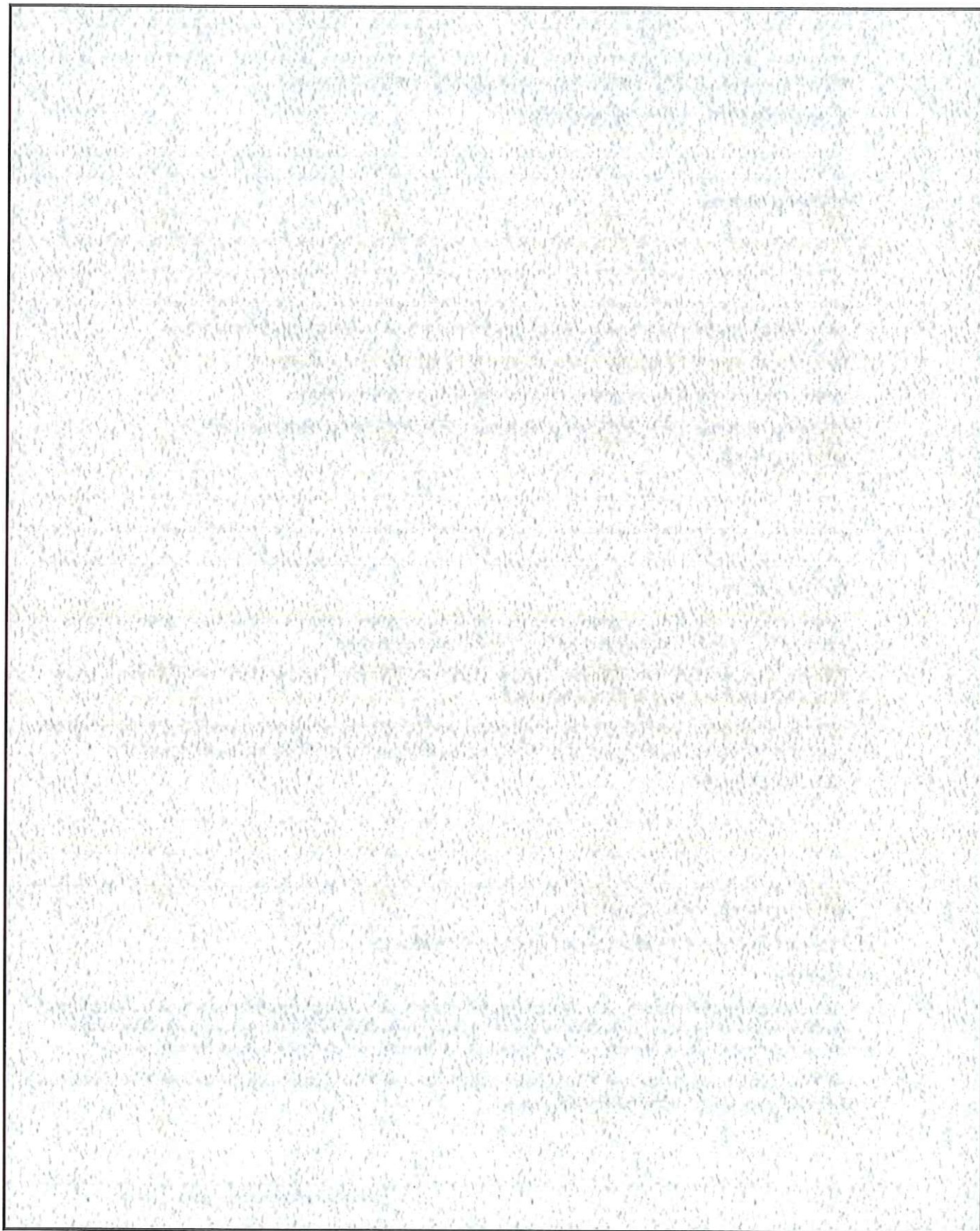
Date

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Signature of Qualified System Evaluator



**Provide a Site Plan in the space below:** Show the actual or best estimate measurements of components that were confirmed during this evaluation; septic tank, soil absorption system, property lines (if known), easements (if known), existing structures, driveways, and water supply (water lines and wells). **Draw to scale and indicate the direction north.**



## MODOC COUNTY OWTS STATISTICS

Year	New Number Installed	Replacement Number Installed	Total Permits	Total Permits Completed
1990	53	24	77	51
1991	37	25	62	48
1992	39	28	67	51
1993	37	25	62	45
1994	55	31	86	66
1995	32	24	56	55
1996	31	27	58	58
1997	28	26	54	49
1998	28	33	61	55
1999	47	25	72	62
2000	23	23	46	42
2001	29	19	48	45
2002	49	28	77	73
2003	42	28	70	60
2004	47	31	78	75
2005	67	32	99	80
2006	125	20	145	129
2007	72	24	96	79
2008	55	29	84	64
2009	19	24	43	28
2010	14	15	29	18
2011	12	14	26	26
2012	5	11	16	16
2013	3	6	9	6
2014	11	20	31	25
2015	7	11	18	10
TOTALS	967	603	1570	1316

Completion Rate	83.8%
Estimated annual failure rate (minor and major) using 3,003 permitted OWTS on file and repair permit stats.	0.77%

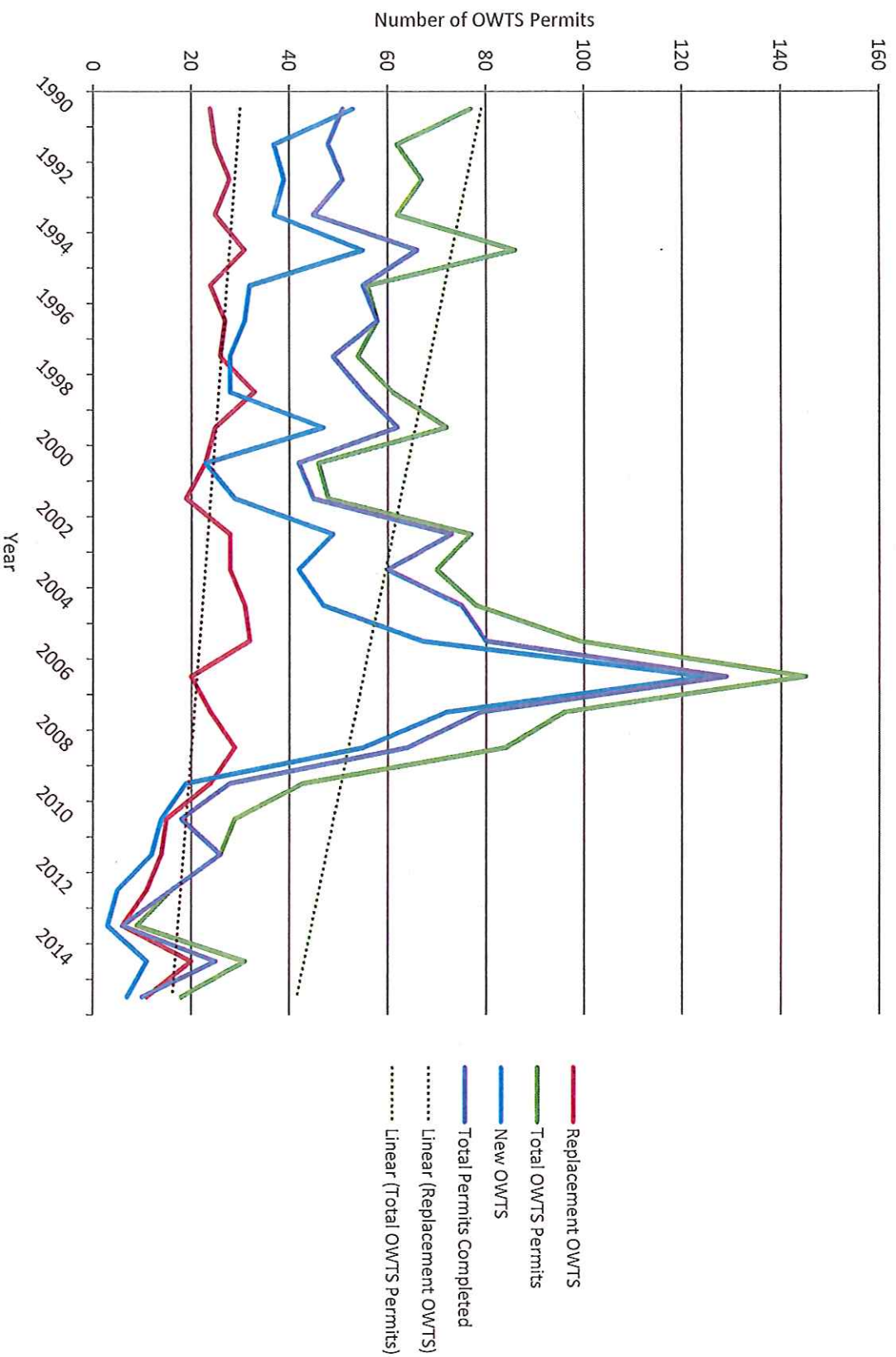
Oldest permit on file is from 1960

### Annual Permit Statistics

Relacement Annual Average	23
New Annual Average	37
Total 26 yr Annual Average	60



# MODOC COUNTY OWTS PERMIT ACTIVITY



### Soil Application Rates Comparison

SWRCB Tables 3 and 4 to Modoc LAMP Table 3 using variance in GPD rates and different methodology for calculated leach area

Leach Area Calculation				Bottom Area 24"			Bottom Area 24"		
Gallons per day per bedroom				150			112.5		
Linear feet 2'				Equivalent Application Rate (gal/day/ft2)			Equivalent Application Rate (gal/day/ft2)		
Soil Group				Soil Group			Soil Group		
Effective Soil Depth	A	B	C	A	B	C	A	B	C
18" to less than 24"	125	150	175	0.60	0.50	0.43	0.45	0.38	0.32
24" to less than 36"	100	125	150	0.75	0.48	0.50	0.56	0.36	0.38
36" to less than 48"	75	100	125	1.00	0.75	0.60	0.75	0.56	0.45
48"+	50	75	125	1.50	1.00	0.60	1.13	0.75	0.45

Leach Area Calculation				Bottom Area + sidewall 24" + 6" = 30"			Bottom Area + sidewall 24" + 6" = 30"		
Gallons per day per bedroom				150			112.5		
Linear feet 2'				Equivalent Application Rate (gal/day/ft2)			Equivalent Application Rate (gal/day/ft2)		
Soil Group				Soil Group			Soil Group		
Effective Soil Depth				Soil Group			Soil Group		
A	B	C	A	B	C	A	B	C	
18" to less than 24"	125	150	175	0.48	0.40	0.34	0.36	0.30	0.26
24" to less than 36"	100	125	150	0.60	0.48	0.40	0.45	0.36	0.30
36" to less than 48"	75	100	125	0.80	0.60	0.48	0.60	0.45	0.36
48"+	50	75	125	1.20	0.80	0.48	0.90	0.60	0.36

Leach Area Calculation				Bottom Area + sidewall 24" + 12" = 36"			Bottom Area + sidewall 24" + 12" = 36"		
Gallons per day per bedroom				150			112.5		
Linear feet 2'				Equivalent Application Rate (gal/day/ft2)			Equivalent Application Rate (gal/day/ft2)		
Soil Group				Soil Group			Soil Group		
Effective Soil Depth	A	B	C	A	B	C	A	B	C
18" to less than 24"	125	150	175	0.40	0.33	0.29	0.30	0.25	0.21
24" to less than 36"	100	125	150	0.50	0.40	0.33	0.38	0.30	0.25
36" to less than 48"	75	100	125	0.67	0.50	0.40	0.50	0.38	0.30
48"+	50	75	125	1.00	0.67	0.40	0.75	0.50	0.30



# Modoc County Residential OWTS water saving adjustment flow calculation justification

## FLOW CALCULATIONS

### Assumptions:

- Average Persons per Household - 2.28 (2007-2011 US Census)
- Average Indoor Water use for a family of four as per building code changes in California. (Water Use in the California Residential Home, 2010)
  - 1975 – 252 gpd 63 gpd/person
  - 1990 – 204 gpd 51 gpd/person
  - 2009 – 162 gpd, 41 gpd/person
  - 2011 – 128 gpd, 32 gpd/person
- Average Daily per capita indoor use – 69.3 gpd (Residential End Uses of Water, 1999)
  - This would be  $69.3 \text{ gpd} \times 2.28 \text{ people per dwelling ave} = 158 \text{ gpd}$  average dwelling in Modoc.
- California Average indoor water usage per capita – 59 gpd (DeOreo et al., 2011)
  - This would be  $59 \text{ gpd} \times 2.28 \text{ people per dwelling ave} = 135 \text{ gpd}$  average dwelling in Modoc.
- Building Code Changes for water conservation requirements
  - 1994 Energy Policy Act would eventually see projected flow rates at 35-55 gpd/person after 2007.
- Estimated gallons per day, three bedroom dwelling with four people (EPA 2002, Table 3-1)
  - $65.1 \text{ gpd/per} \times 4 \text{ per} = 260 \text{ gpd}$

Considering the latest data on residential water usage, Modoc County Environmental Health (MCEH) will break flows in two categories and prorate dwelling occupancy peak flows as per census statistics. The first category shall be pre 2007 constructed dwellings using flow estimations relative to data from 1984-

1999. This category recognizes the possibility that low flow fixtures or appliances are partially or not at all installed. The second category, post 2007 construction, assumes low flow fixtures are installed and the majority of appliances meet 2007 water and energy standards. California Green Building Standards Code (CGBSC) will improve water efficiency even further by 2011. Pre 2007 residential dwellings can utilize the post 2007 flow estimates if the owner demonstrates all water fixtures and appliances meet current water usage/flow standards.

Peek flows for both flow design estimates are buffered by an additional 25% and prorated as the dwelling increases bedrooms assuming census statistics remain at 2.28 persons per household. Peek flows are additionally mitigated by evapotranspiration characteristics in Modoc County. Residential dwellings that are upgraded or constructed post 2011 to CGBSC standards will only increase the buffer between average daily use and peek flows.

Utilizing flow calculations for residential wastewater in two tiers will encourage installation of water saving fixtures and appliances. The savings in leach area construction will offset the cost of upgrading fixtures and appliances. See cost comparison in Table 2.

Residential OWTS will utilize percolation rates and/or soil profile characteristics to determine application rate. Estimated residential design flows are listed in Table 1.

Table 1 - Residential OWTS flow rates

Number of dwelling bedrooms	Est. # persons	Peek flow adjustment	Est. flows pre 2007 construction per person gpd**	Est. flows pre 2007 construction gpd**	Est. flows post 2007 construction per person gpd*	Est. flows post 2007 construction gpd*	Percentage Difference
1	2	1.25	75	188	50	125	34%
2	3	1.25	75	281	50	188	33%
3	4	1.25	75	375	50	250	33%
4	5	1	75	375	50	250	33%
additional	6	1	75	450	50	300	33%

\*Assuming water use is meeting the 1994 Energy Policy Act (EPACT) standards for efficient water flow fixtures and appliances.

\*\* Pre 2007 constructed dwellings can utilize post 2007 flow calculations if water saving fixtures and appliances are demonstrated.



Table 2 - Pre 2007 constructed three bedroom home septic system replacement upgrade cost comparison.

Residential Dwelling - three bedroom	Soil Application rate in gal/sq ft (clay loam soil)	Estimated gpd	Required leach area in sq ft	Length of High Capacity chamber in feet (4 sq ft leach area per linear ft)	A. Estimated Cost per linear foot of chamber installed	B. Estimated Cost per linear foot of chamber installed	Estimated Cost at price A	Estimated Cost at price B
Pre 2007 const. daily flow rate	0.2	375	1,875	469	\$10	\$15	\$4,688	\$7,031
Post 2007 const. daily flow rate	0.2	250	1,250	313	\$10	\$15	\$3,125	\$4,688
Difference between upgrading fixtures and water using appliances on leach area cost.							\$1,563	\$2,344

## Applying Reduction Comparison to Existing Flow Calculations

Since there have been great strides to incorporate water saving devices in homes it would only be prudent we find a way to incorporate the water savings reduction into OWTS design flow calculations. There are a multitude of reasons why this makes sense, here are just a few:

1. We are still designing to half a century old standards that do not take into account reductions in water use.
2. Over sizing leach area, in some circumstances, reduces treatment and can negatively impact water quality. Healthy biomats are essential for maximum treatment of effluent.
3. Offering a reduction to design criteria is a great opportunity to increase the use of water saving fixtures and appliances in pre 2007 buildings.

For the reduction to work a degree of design safety needs to be considered. The original safety factor that resulted in a factor that doubled actual predicted use (US EPA 2002) is a good baseline. Table one shows us that the water saving efforts shows a mean reduction of 33% in water use between pre and post 2007 dwellings. Table two shows a cost savings applied to the 33% reduction which is significant and can encourage installation of water saving appliances and fixtures in pre 2007 dwellings. A design flow reduction of 25% is reasonable and provides a safety factor in line with US EPA and will still provide a significant incentive to install water saving devices.

To apply this reduction to the Modoc County LAMP design flows (Table 2) an application process to assess the legitimacy of the water savings reduction and a condition of use will need to be added to the permit.



